SEQUENCE LISTING

<110> KNAPPIK, ACHIM
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ILAG, VIC
GE, LIMING
MORONEY, SIMON
PLUECKTHUN, ANDREAS

<120> PROTEIN/(POLY)PEPTIDE LIBRARIES

<130> 37629-0008US

<140> 09/490,064
<141> 2000-01-24

<150> 09/025,709
<151> 1998-02-18

<160> 372

<170> PatentIn Ver. 3.3

<210> 1
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<220>
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<400> 1
Ala Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
1 5 10 15

Gly Gly Gly Ser
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<210> 2
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 2
tcagcgggtg gcggttctgg cggcggtggg agcggtggcg gtggttctgg cggtggtggt 60
tccgatatcg gtccacgtac gg 82

<210> 3
<211> 83
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 3
aattccgtac gtggaccgat atcggaacca ccaccgccag aaccaccgcc accgctccca 60
ccgccgccag aaccgccacc cgc 83

<210> 4
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide template

<220>
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<222> (28)..(30)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<220>
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<222> (31)..(33)
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capable of coding any natural occurring amino acid
other than Cys

<220>
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capable of coding any natural occurring amino acid
other than Cys

<220>
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capable of coding any natural occurring amino acid
other than Cys

<220>
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capable of coding any natural occurring amino acid
other than Cys

<220>
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<400> 4
gatacggccg tgtattattg cgcgcgtnnn nnnnnnnnnn nnnnngatta ttggggccaa 60
ggcaccctg 69

<210> 5
<211> 84
<212> DNA
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<220>
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other than Cys

<220>
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other than Cys

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capable of coding any natural occurring amino acid
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capable of coding any natural occurring amino acid
other than Cys

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capable of coding any natural occurring amino acid
other than Cys

<400> 5
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gatkwttggg gccaaggcac cctg 84

<210> 6
<211> 21
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 6
gatacggccg tgtattattg c 21

<210> 7
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 7
cagggtgcct tggcccc 17

<210> 8
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic primer

<400> 8
gcagaaggcg aacgtcc 17

<210> 9
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<220>
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other than Cys

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ttggccaggg tacgaaagtt 80

<210> 10
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 10
aactttcgta ccctggcc 18

<210> 11
<211> 108
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide template

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<220>
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capable of coding any natural occurring amino acid
other than Cys

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<222> (30)..(32)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

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<222> (33)..(35)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<220>
<221> modified_base
<222> (42)..(44)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<220>
<221> modified_base
<222> (48)..(50)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 11
agggtctcga gtgggtgagc nnnattnnnn nnnnnrvtrv tnnnaccnnn tatgcggata 60
gcgtgaaagg ccgttttacc atttcacgtg ataattcgaa aaacacca 108

<210> 12
<211> 105
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide template

<220>
<221> modified_base
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capable of coding any natural occurring amino acid
other than Cys

<220>
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<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

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capable of coding any natural occurring amino acid
other than Cys

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<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<220>
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<222> (45)..(47)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 12
agggtctcga gtgggtgagc nnnattnnnn nnrvtrvtnn naccnnntat gcggatagcg 60
tgaaaggccg ttttaccatt tcacgtgata attcgaaaaa cacca 105

<210> 13
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
primer

<400> 13
tggtgttttt cgaattatca 20

<210> 14
<211> 108
<212> PRT
<213> Homo sapiens

<400> 14
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Tyr Ser Thr Pro Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 15
<211> 113
<212> PRT
<213> Homo sapiens

<400> 15
Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly
1 5 10 15

Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser
20 25 30

Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln Ser
35 40 45

Pro Gln Leu Leu Ile Tyr Leu Gly Ser Asn Arg Ala Ser Gly Val Pro
50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln Ala
85 90 95

Leu Gln Thr Pro Tyr Thr Phe Gly Gln Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<210> 16
<211> 109
<212> PRT
<213> Homo sapiens

<400> 16
Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
20 25 30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
35 40 45

Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65 70 75 80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Asn Ser Pro
85 90 95

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Tyr Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
        100                 105
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<210> 17
<211> 114
<212> PRT
<213> Homo sapiens

<400> 17

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Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
  1               5                  10                  15

Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
             20                  25                  30

Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
         35                  40                  45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
     50                  55                  60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65                  70                  75                  80

Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
                 85                  90                  95

Tyr Tyr Ser Thr Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile
             100                 105                 110

Lys Arg
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<210> 18
<211> 112
<212> PRT
<213> Homo sapiens

<400> 18

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Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
  1               5                  10                  15

Arg Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn
             20                  25                  30

Tyr Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu
         35                  40                  45

Ile Tyr Asp Asn Asn Lys Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
     50                  55                  60

Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu Gln
 65                  70                  75                  80

Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Ala Thr Trp Asp Asp Ser Leu
                 85                  90                  95
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Ser Gly Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
100 105 110

<210> 19
<211> 112
<212> PRT
<213> Homo sapiens

<400> 19
Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser Gly Ser Pro Gly Gln
1 5 10 15

Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr
20 25 30

Asn Tyr Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
35 40 45

Met Ile Tyr Asp Val Ser Lys Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Ala Gly Ser
85 90 95

Ser Thr Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
100 105 110

<210> 20
<211> 108
<212> PRT
<213> Homo sapiens

<400> 20
Tyr Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln Thr
1 5 10 15

Ala Arg Ile Thr Cys Ser Gly Asp Ser Leu Gly Ser Lys Tyr Ala Ser
20 25 30

Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr Asp
35 40 45

Asp Asn Lys Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser Asn
50 55 60

Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Val Gln Ala Glu Asp
65 70 75 80

Glu Ala Asp Tyr Tyr Cys Gln Ser Trp Asp Ser Ser Gly Asn Val Val
85 90 95

Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
100 105

<210> 21
<211> 119
<212> PRT
<213> Homo sapiens

<400> 21
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe
50 55 60

Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Ala Pro Gly Tyr Cys Ser Gly Phe Asp Tyr Trp Gly Gln Gly
100 105 110

Thr Leu Val Thr Val Ser Ser
115

<210> 22
<211> 117
<212> PRT
<213> Homo sapiens

<400> 22
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Trp Ile Asn Pro Asn Ser Gly Asn Thr Asn Tyr Ala Gln Lys Phe
50 55 60

```
Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr
 65                  70                  75                  80

Met Glu Leu Ser Ser Leu Arg Ser Asp Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

Ala Arg Asp Gly Asp Gly Gly Phe Asp Tyr Trp Gly Gln Gly Thr Leu
            100                 105                 110

Val Thr Val Ser Ser
        115
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<210> 23
<211> 120
<212> PRT
<213> Homo sapiens

<400> 23

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Glx Val Thr Leu Lys Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln
  1               5                  10                  15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20                  25                  30

Gly Met Gly Val Ser Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu
        35                  40                  45

Trp Leu Ala His Ile Asp Trp Asp Asp Asp Lys Tyr Tyr Ser Thr Ser
    50                  55                  60

Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
 65                  70                  75                  80

Val Leu Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr
                85                  90                  95

Cys Ala Arg Ile His Asn Ile Gly Glu Ala Phe Asp Val Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
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<210> 24
<211> 117
<212> PRT
<213> Homo sapiens

<400> 24

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Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
  1               5                  10                  15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
            20                  25                  30
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```
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
         35                  40                  45

Ser Val Ile Ser Tyr Asp Gly Gly Asn Thr Tyr Tyr Ala Asp Ser Val
     50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
 65                  70                  75                  80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

Ala Arg Asp Arg Gly Gly Ser Gly Asp Tyr Trp Gly Gln Gly Thr Leu
            100                 105                 110

Val Thr Val Ser Ser
        115
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<210> 25
<211> 118
<212> PRT
<213> Homo sapiens

<400> 25

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Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
  1               5                  10                  15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
            20                  25                  30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
         35                  40                  45

Gly Glu Ile Tyr His Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
     50                  55                  60

Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
 65                  70                  75                  80

Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
                 85                  90                  95

Arg Gly Arg Gly Gly Gly Gly Val Phe Asp Tyr Trp Gly Gln Gly Thr
            100                 105                 110

Leu Val Thr Val Ser Ser
        115
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<210> 26
<211> 119
<212> PRT
<213> Homo sapiens

<400> 26

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Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
  1               5                  10                  15
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```
Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
            20                  25                  30

Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
        35                  40                  45

Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
    50                  55                  60

Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr
65                  70                  75                  80

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
                85                  90                  95

Ala Arg Leu Gly Gly Gly Gly Tyr Tyr Phe Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Leu Val Thr Val Ser Ser
        115
```

<210> 27
<211> 119
<212> PRT
<213> Homo sapiens

<400> 27

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Gln Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
  1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Ser Val Ser Ser Asn
            20                  25                  30

Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro Ser Arg Gly Leu Glu
        35                  40                  45

Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr Asn Asp Tyr Ala
    50                  55                  60

Val Ser Val Lys Ser Arg Ile Thr Ile Asn Pro Asp Thr Ser Lys Asn
65                  70                  75                  80

Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Val
                85                  90                  95

Tyr Tyr Cys Ala Arg Asp Pro Gly Gly Phe Asp Val Trp Gly Gln Gly
            100                 105                 110

Thr Leu Val Thr Val Ser Ser
        115
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<210> 28
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 28
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Tyr
20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
100 105

<210> 29
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 29
Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly
1 5 10 15

Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser
20 25 30

Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln Ser
35 40 45

Pro Gln Leu Leu Ile Tyr Leu Gly Ser Asn Arg Ala Ser Gly Val Pro
50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln Gln His
85 90 95

Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105 110

Arg Thr

<210> 30
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 30
Asp Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
20 25 30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
35 40 45

Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Val Pro Ala Arg Phe Ser
50 55 60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu
65 70 75 80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro
85 90 95

Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
100 105 110

<210> 31
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 31
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Arg Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30

Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
85 90 95

His Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile
100 105 110

Lys Arg Thr
115

<210> 32
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 32
Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
1 5 10 15

Arg Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn
20 25 30

Tyr Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu
35 40 45

Ile Tyr Asp Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
50 55 60

Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu Gln
65 70 75 80

Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro
85 90 95

Pro Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105

<210> 33
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 33
Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser Gly Ser Pro Gly Gln
1 5 10 15

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Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr
            20                  25                  30

Asn Tyr Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
        35                  40                  45

Met Ile Tyr Asp Val Ser Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
    50                  55                  60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65                  70                  75                  80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr
                85                  90                  95

Pro Pro Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105                 110
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<210> 34
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 34

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Ser Tyr Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
  1               5                  10                  15

Thr Ala Arg Ile Ser Cys Ser Gly Asp Ala Leu Gly Asp Lys Tyr Ala
            20                  25                  30

Ser Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr
        35                  40                  45

Asp Asp Ser Asp Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
    50                  55                  60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Glu
65                  70                  75                  80

Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro Val
                85                  90                  95

Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105
```

<210> 35
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 35
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe
50 55 60

Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 36
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 36
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

Gly Trp Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr Ala Gln Lys Phe
50 55 60

Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

```
Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 37
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 37

```
Gln Val Gln Leu Lys Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln
  1               5                  10                  15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ser
             20                  25                  30

Gly Val Gly Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu
         35                  40                  45

Trp Leu Ala Leu Ile Asp Trp Asp Asp Asp Lys Tyr Tyr Ser Thr Ser
     50                  55                  60

Leu Lys Thr Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
 65                  70                  75                  80

Val Leu Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr
                 85                  90                  95

Cys Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 38
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 38

```
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
  1               5                  10                  15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
             20                  25                  30
```

```
Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
         35                  40                  45

Ser Ala Ile Ser Gly Ser Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val
     50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
 65                  70                  75                  80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 39
<211> 119
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 39

```
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
  1               5                  10                  15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
             20                  25                  30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
         35                  40                  45

Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
     50                  55                  60

Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
 65                  70                  75                  80

Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
                 85                  90                  95

Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Leu Val Thr Val Ser Ser
        115
```

<210> 40
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 40
Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
1 5 10 15

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
20 25 30

Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
35 40 45

Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
50 55 60

Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr
65 70 75 80

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
85 90 95

Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 41
<211> 123
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic consensus protein

<400> 41
Gln Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
1 5 10 15

Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Ser Val Ser Ser Asn
20 25 30

Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro Gly Arg Gly Leu Glu
35 40 45

Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr Asn Asp Tyr Ala
50 55 60

Val Ser Val Lys Ser Arg Ile Thr Ile Asn Pro Asp Thr Ser Lys Asn
65 70 75 80

Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Val
85 90 95

```
Tyr Tyr Cys Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr
            100                 105                 110

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 42
<211> 327
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<220>
<221> CDS
<222> (1)..(327)

<400> 42

```
gat atc cag atg acc cag agc ccg tct agc ctg agc gcg agc gtg ggt   48
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
  1               5                  10                  15

gat cgt gtg acc att acc tgc aga gcg agc cag ggc att agc agc tat   96
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Tyr
             20                  25                  30

ctg gcg tgg tac cag cag aaa cca ggt aaa gca ccg aaa cta tta att   144
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
         35                  40                  45

tat gca gcc agc agc ttg caa agc ggg gtc ccg tcc cgt ttt agc ggc   192
Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
     50                  55                  60

tct gga tcc ggc act gat ttt acc ctg acc att agc agc ctg caa cct   240
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65                  70                  75                  80

gaa gac ttt gcg acc tat tat tgc cag cag cat tat acc acc ccg ccg   288
Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro
                 85                  90                  95

acc ttt ggc cag ggt acg aaa gtt gaa att aaa cgt acg               327
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
            100                 105
```

<210> 43
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<400> 43

```
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
  1               5                  10                  15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Tyr
             20                  25                  30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
         35                  40                  45

Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
     50                  55                  60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65                  70                  75                  80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro
                85                  90                  95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
            100                 105
```

<210> 44
<211> 342
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<220>
<221> CDS
<222> (1)..(342)

<400> 44

```
gat atc gtg atg acc cag agc cca ctg agc ctg cca gtg act ccg ggc   48
Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly
  1               5                  10                  15

gag cct gcg agc att agc tgc aga agc agc caa agc ctg ctg cat agc   96
Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser
             20                  25                  30

aac ggc tat aac tat ctg gat tgg tac ctt caa aaa cca ggt caa agc   144
Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln Ser
         35                  40                  45

ccg cag cta tta att tat ctg ggc agc aac cgt gcc agt ggg gtc ccg   192
Pro Gln Leu Leu Ile Tyr Leu Gly Ser Asn Arg Ala Ser Gly Val Pro
     50                  55                  60
```

```
gat cgt ttt agc ggc tct gga tcc ggc acc gat ttt acc ctg aaa att   240
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
 65                  70                  75                  80

agc cgt gtg gaa gct gaa gac gtg ggc gtg tat tat tgc cag cag cat   288
Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln Gln His
                85                  90                  95

tat acc acc ccg ccg acc ttt ggc cag ggt acg aaa gtt gaa att aaa   336
Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110

cgt acg                                                          342
Arg Thr
```

<210> 45
<211> 114
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<400> 45

```
Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly
  1               5                  10                  15

Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Leu His Ser
             20                  25                  30

Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln Lys Pro Gly Gln Ser
         35                  40                  45

Pro Gln Leu Leu Ile Tyr Leu Gly Ser Asn Arg Ala Ser Gly Val Pro
     50                  55                  60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
 65                  70                  75                  80

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln Gln His
                85                  90                  95

Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100                 105                 110

Arg Thr
```

<210> 46
<211> 330
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<220>
<221> CDS
<222> (1)..(330)

<400> 46

```
gat atc gtg ctg acc cag agc ccg gcg acc ctg agc ctg tct ccg ggc   48
Asp Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
  1               5                  10                  15

gaa cgt gcg acc ctg agc tgc aga gcg agc cag agc gtg agc agc agc   96
Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
             20                  25                  30

tat ctg gcg tgg tac cag cag aaa cca ggt caa gca ccg cgt cta tta   144
Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
         35                  40                  45

att tat ggc gcg agc agc cgt gca act ggg gtc ccg gcg cgt ttt agc   192
Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Val Pro Ala Arg Phe Ser
     50                  55                  60

ggc tct gga tcc ggc acg gat ttt acc ctg acc att agc agc ctg gaa   240
Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu
 65                  70                  75                  80

cct gaa gac ttt gcg gtg tat tat tgc cag cag cat tat acc acc ccg   288
Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro
                 85                  90                  95

ccg acc ttt ggc cag ggt acg aaa gtt gaa att aaa cgt acg           330
Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
            100                 105                 110
```

<210> 47
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<400> 47

```
Asp Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
  1               5                  10                  15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
             20                  25                  30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
         35                  40                  45
```

```
Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Val Pro Ala Arg Phe Ser
     50                  55                  60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu
 65                  70                  75                  80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro
                 85                  90                  95

Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
            100                 105                 110
```

<210> 48
<211> 345
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<220>
<221> CDS
<222> (1)..(345)

<400> 48

```
gat atc gtg atg acc cag agc ccg gat agc ctg gcg gtg agc ctg ggc   48
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
  1               5                  10                  15

gaa cgt gcg acc att aac tgc aga agc agc cag agc gtg ctg tat agc   96
Glu Arg Ala Thr Ile Asn Cys Arg Ser Ser Gln Ser Val Leu Tyr Ser
             20                  25                  30

agc aac aac aaa aac tat ctg gcg tgg tac cag cag aaa cca ggt cag   144
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
         35                  40                  45

ccg ccg aaa cta tta att tat tgg gca tcc acc cgt gaa agc ggg gtc   192
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
     50                  55                  60

ccg gat cgt ttt agc ggc tct gga tcc ggc act gat ttt acc ctg acc   240
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65                  70                  75                  80

att tcg tcc ctg caa gct gaa gac gtg gcg gtg tat tat tgc cag cag   288
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
                 85                  90                  95

cat tat acc acc ccg ccg acc ttt ggc cag ggt acg aaa gtt gaa att   336
His Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile
            100                 105                 110
```

aaa cgt acg 345
Lys Arg Thr
115

<210> 49
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V kappa consensus gene

<400> 49
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15

Glu Arg Ala Thr Ile Asn Cys Arg Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30

Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
85 90 95

His Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile
100 105 110

Lys Arg Thr
115

<210> 50
<211> 327
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V lambda consensus gene

<220>
<221> CDS
<222> (1)..(327)

<400> 50
cag agc gtg ctg acc cag ccg cct tca gtg agt ggc gca cca ggt cag 48
Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
1 5 10 15

```
cgt gtg acc atc tcg tgt agc ggc agc agc agc aac att ggc agc aac   96
Arg Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn
             20                  25                  30

tat gtg agc tgg tac cag cag ttg ccc ggg acg gcg ccg aaa ctg ctg   144
Tyr Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu
         35                  40                  45

att tat gat aac aac cag cgt ccc tca ggc gtg ccg gat cgt ttt agc   192
Ile Tyr Asp Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
     50                  55                  60

gga tcc aaa agc ggc acc agc gcg agc ctt gcg att acg ggc ctg caa   240
Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu Gln
 65                  70                  75                  80

agc gaa gac gaa gcg gat tat tat tgc cag cag cat tat acc acc ccg   288
Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro
                 85                  90                  95

cct gtg ttt ggc ggc ggc acg aag tta acc gtt ctt ggc               327
Pro Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105
```

<210> 51
<211> 109
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V lambda consensus gene

<400> 51

```
Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Gly Ala Pro Gly Gln
  1               5                  10                  15

Arg Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn
             20                  25                  30

Tyr Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu
         35                  40                  45

Ile Tyr Asp Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser
     50                  55                  60

Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Thr Gly Leu Gln
 65                  70                  75                  80

Ser Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro
                 85                  90                  95

Pro Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105
```

<210> 52
<211> 330
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V lambda consensus gene

<220>
<221> CDS
<222> (1)..(330)

<400> 52
```
cag agc gca ctg acc cag cca gct tca gtg agc ggc tca cca ggt cag   48
Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser Gly Ser Pro Gly Gln
  1               5                  10                  15

agc att acc atc tcg tgt acg ggt act agc agc gat gtg ggc ggc tat   96
Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr
             20                  25                  30

aac tat gtg agc tgg tac cag cag cat ccc ggg aag gcg ccg aaa ctg   144
Asn Tyr Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
         35                  40                  45

atg att tat gat gtg agc aac cgt ccc tca ggc gtg agc aac cgt ttt   192
Met Ile Tyr Asp Val Ser Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
     50                  55                  60

agc gga tcc aaa agc ggc aac acc gcg agc ctg acc att agc ggc ctg   240
Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
 65                  70                  75                  80

caa gcg gaa gac gaa gcg gat tat tat tgc cag cag cat tat acc acc   288
Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr
                 85                  90                  95

ccg cct gtg ttt ggc ggc ggc acg aag tta acc gtt ctt ggc           330
Pro Pro Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105                 110
```

<210> 53
<211> 110
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V lambda consensus gene

<400> 53
```
Gln Ser Ala Leu Thr Gln Pro Ala Ser Val Ser Gly Ser Pro Gly Gln
  1               5                  10                  15
```

```
Ser Ile Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr
            20                  25                  30

Asn Tyr Val Ser Trp Tyr Gln Gln His Pro Gly Lys Ala Pro Lys Leu
        35                  40                  45

Met Ile Tyr Asp Val Ser Asn Arg Pro Ser Gly Val Ser Asn Arg Phe
    50                  55                  60

Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65                  70                  75                  80

Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr
                85                  90                  95

Pro Pro Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
            100                 105                 110
```

<210> 54
<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V lambda consensus gene

<220>
<221> CDS
<222> (1)..(321)

<400> 54

```
agc tat gaa ctg acc cag ccg cct tca gtg agc gtt gca cca ggt cag   48
Ser Tyr Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
  1               5                  10                  15

acc gcg cgt atc tcg tgt agc ggc gat gcg ctg ggc gat aaa tac gcg   96
Thr Ala Arg Ile Ser Cys Ser Gly Asp Ala Leu Gly Asp Lys Tyr Ala
            20                  25                  30

agc tgg tac cag cag aaa ccc ggg cag gcg cca gtt ctg gtg att tat   144
Ser Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr
        35                  40                  45

gat gat tct gac cgt ccc tca ggc atc ccg gaa cgc ttt agc gga tcc   192
Asp Asp Ser Asp Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
    50                  55                  60

aac agc ggc aac acc gcg acc ctg acc att agc ggc act cag gcg gaa   240
Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Glu
65                  70                  75                  80

gac gaa gcg gat tat tat tgc cag cag cat tat acc acc ccg cct gtg   288
Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro Val
                85                  90                  95
```

ttt ggc ggc ggc acg aag tta acc gtt ctt ggc 321
Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105

<210> 55
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V lambda consensus gene

<400> 55
Ser Tyr Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ala Pro Gly Gln
1 5 10 15

Thr Ala Arg Ile Ser Cys Ser Gly Asp Ala Leu Gly Asp Lys Tyr Ala
20 25 30

Ser Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Val Leu Val Ile Tyr
35 40 45

Asp Asp Ser Asp Arg Pro Ser Gly Ile Pro Glu Arg Phe Ser Gly Ser
50 55 60

Asn Ser Gly Asn Thr Ala Thr Leu Thr Ile Ser Gly Thr Gln Ala Glu
65 70 75 80

Asp Glu Ala Asp Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro Val
85 90 95

Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105

<210> 56
<211> 361
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<220>
<221> CDS
<222> (1)..(360)

<400> 56
cag gtg caa ttg gtt cag tct ggc gcg gaa gtg aaa aaa ccg ggc agc 48
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1 5 10 15

```
agc gtg aaa gtg agc tgc aaa gcc tcc gga ggc act ttt agc agc tat   96
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
             20                  25                  30

gcg att agc tgg gtg cgc caa gcc cct ggg cag ggt ctc gag tgg atg   144
Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
         35                  40                  45

ggc ggc att att ccg att ttt ggc acg gcg aac tac gcg cag aag ttt   192
Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe
     50                  55                  60

cag ggc cgg gtg acc att acc gcg gat gaa agc acc agc acc gcg tat   240
Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala Tyr
 65                  70                  75                  80

atg gaa ctg agc agc ctg cgt agc gaa gat acg gcc gtg tat tat tgc   288
Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

gcg cgt tgg ggc ggc gat ggc ttt tat gcg atg gat tat tgg ggc caa   336
Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

ggc acc ctg gtg acg gtt agc tca g                                361
Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 57
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<400> 57

```
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
  1               5                  10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
             20                  25                  30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
         35                  40                  45

Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe
     50                  55                  60

Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala Tyr
 65                  70                  75                  80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95
```

```
Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 58
<211> 361
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<220>
<221> CDS
<222> (1)..(360)

<400> 58

```
cag gtg caa ttg gtt cag agc ggc gcg gaa gtg aaa aaa ccg ggc gcg   48
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala
  1               5                  10                  15

agc gtg aaa gtg agc tgc aaa gcc tcc gga tat acc ttt acc agc tat   96
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
             20                  25                  30

tat atg cac tgg gtc cgc caa gcc cct ggg cag ggt ctc gag tgg atg   144
Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
         35                  40                  45

ggc tgg att aac ccg aat agc ggc ggc acg aac tac gcg cag aag ttt   192
Gly Trp Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr Ala Gln Lys Phe
     50                  55                  60

cag ggc cgg gtg acc atg acc cgt gat acc agc att agc acc gcg tat   240
Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile Ser Thr Ala Tyr
 65                  70                  75                  80

atg gaa ctg agc agc ctg cgt agc gaa gat acg gcc gtg tat tat tgc   288
Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

gcg cgt tgg ggc ggc gat ggc ttt tat gcg atg gat tat tgg ggc caa   336
Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

ggc acc ctg gtg acg gtt agc tca g                                361
Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 59
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V
heavy chain gene sequence

<400> 59

Gln	Val	Gln	Leu	Val	Gln	Ser	Gly	Ala	Glu	Val	Lys	Lys	Pro	Gly	Ala
1				5					10					15	
Ser	Val	Lys	Val	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Thr	Phe	Thr	Ser	Tyr
			20					25					30		
Tyr	Met	His	Trp	Val	Arg	Gln	Ala	Pro	Gly	Gln	Gly	Leu	Glu	Trp	Met
		35					40					45			
Gly	Trp	Ile	Asn	Pro	Asn	Ser	Gly	Gly	Thr	Asn	Tyr	Ala	Gln	Lys	Phe
	50					55					60				
Gln	Gly	Arg	Val	Thr	Met	Thr	Arg	Asp	Thr	Ser	Ile	Ser	Thr	Ala	Tyr
65					70					75					80
Met	Glu	Leu	Ser	Ser	Leu	Arg	Ser	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85					90					95	
Ala	Arg	Trp	Gly	Gly	Asp	Gly	Phe	Tyr	Ala	Met	Asp	Tyr	Trp	Gly	Gln
			100					105					110		
Gly	Thr	Leu	Val	Thr	Val	Ser	Ser								
		115					120								

<210> 60
<211> 364
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V
heavy chain gene sequence

<220>
<221> CDS
<222> (1)..(363)

<400> 60

cag	gtg	caa	ttg	aaa	gaa	agc	ggc	ccg	gcc	ctg	gtg	aaa	ccg	acc	caa	48
Gln	Val	Gln	Leu	Lys	Glu	Ser	Gly	Pro	Ala	Leu	Val	Lys	Pro	Thr	Gln	
1				5					10					15		
acc	ctg	acc	ctg	acc	tgt	acc	ttt	tcc	gga	ttt	agc	ctg	tcc	acg	tct	96
Thr	Leu	Thr	Leu	Thr	Cys	Thr	Phe	Ser	Gly	Phe	Ser	Leu	Ser	Thr	Ser	
			20					25					30			

```
ggc gtt ggc gtg ggc tgg att cgc cag ccg cct ggg aaa gcc ctc gag   144
Gly Val Gly Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu
         35                  40                  45

tgg ctg gct ctg att gat tgg gat gat gat aag tat tat agc acc agc   192
Trp Leu Ala Leu Ile Asp Trp Asp Asp Asp Lys Tyr Tyr Ser Thr Ser
     50                  55                  60

ctg aaa acg cgt ctg acc att agc aaa gat act tcg aaa aat cag gtg   240
Leu Lys Thr Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
 65                  70                  75                  80

gtg ctg act atg acc aac atg gac ccg gtg gat acg gcc acc tat tat   288
Val Leu Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr
                 85                  90                  95

tgc gcg cgt tgg ggc ggc gat ggc ttt tat gcg atg gat tat tgg ggc   336
Cys Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly
            100                 105                 110

caa ggc acc ctg gtg acg gtt agc tca g                            364
Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 61
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<400> 61

```
Gln Val Gln Leu Lys Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln
  1               5                  10                  15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ser
             20                  25                  30

Gly Val Gly Val Gly Trp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu
         35                  40                  45

Trp Leu Ala Leu Ile Asp Trp Asp Asp Asp Lys Tyr Tyr Ser Thr Ser
     50                  55                  60

Leu Lys Thr Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
 65                  70                  75                  80

Val Leu Thr Met Thr Asn Met Asp Pro Val Asp Thr Ala Thr Tyr Tyr
                 85                  90                  95

Cys Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly
            100                 105                 110

Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 62
<211> 361
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V
heavy chain gene sequence

<220>
<221> CDS
<222> (1)..(360)

<400> 62
gaa gtg caa ttg gtg gaa agc ggc ggc ggc ctg gtg caa ccg ggc ggc 48
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

agc ctg cgt ctg agc tgc gcg gcc tcc gga ttt acc ttt agc agc tat 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30

gcg atg agc tgg gtg cgc caa gcc cct ggg aag ggt ctc gag tgg gtg 144
Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

agc gcg att agc ggt agc ggc ggc agc acc tat tat gcg gat agc gtg 192
Ser Ala Ile Ser Gly Ser Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val
50 55 60

aaa ggc cgt ttt acc att tca cgt gat aat tcg aaa aac acc ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80

ctg caa atg aac agc ctg cgt gcg gaa gat acg gcc gtg tat tat tgc 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

gcg cgt tgg ggc ggc gat ggc ttt tat gcg atg gat tat tgg ggc caa 336
Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
100 105 110

ggc acc ctg gtg acg gtt agc tca g 361
Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 63
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V
heavy chain gene sequence

<400> 63

```
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
  1               5                  10                  15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
             20                  25                  30

Ala Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
         35                  40                  45

Ser Ala Ile Ser Gly Ser Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val
     50                  55                  60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
 65                  70                  75                  80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 64
<211> 358
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<220>
<221> CDS
<222> (1)..(357)

<400> 64

```
cag gtg caa ttg caa gaa agt ggt ccg ggc ctg gtg aaa ccg agc gaa   48
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
  1               5                  10                  15

acc ctg agc ctg acc tgc acc gtt tcc gga ggc agc att agc agc tat   96
Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
             20                  25                  30

tat tgg agc tgg att cgc cag ccg cct ggg aag ggt ctc gag tgg att   144
Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
         35                  40                  45

ggc tat att tat tat agc ggc agc acc aac tat aat ccg agc ctg aaa   192
Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
     50                  55                  60
```

```
agc cgg gtg acc att agc gtt gat act tcg aaa aac cag ttt agc ctg   240
Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
 65                  70                  75                  80

aaa ctg agc agc gtg acg gcg gcg gat acg gcc gtg tat tat tgc gcg   288
Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
                 85                  90                  95

cgt tgg ggc ggc gat ggc ttt tat gcg atg gat tat tgg ggc caa ggc   336
Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln Gly
            100                 105                 110

acc ctg gtg acg gtt agc tca g                                    358
Thr Leu Val Thr Val Ser Ser
        115
```

<210> 65
<211> 119
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<400> 65

```
Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
  1               5                  10                  15

Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
             20                  25                  30

Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
         35                  40                  45

Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
     50                  55                  60

Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
 65                  70                  75                  80

Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
                 85                  90                  95

Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln Gly
            100                 105                 110

Thr Leu Val Thr Val Ser Ser
        115
```

<210> 66
<211> 361
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V
heavy chain gene sequence

<220>
<221> CDS
<222> (1)..(360)

<400> 66
```
gaa gtg caa ttg gtt cag agc ggc gcg gaa gtg aaa aaa ccg ggc gaa   48
Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
  1               5                  10                  15

agc ctg aaa att agc tgc aaa ggt tcc gga tat tcc ttt acg agc tat   96
Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
             20                  25                  30

tgg att ggc tgg gtg cgc cag atg cct ggg aag ggt ctc gag tgg atg   144
Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
         35                  40                  45

ggc att att tat ccg ggc gat agc gat acc cgt tat tct ccg agc ttt   192
Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
     50                  55                  60

cag ggc cag gtg acc att agc gcg gat aaa agc att agc acc gcg tat   240
Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr
 65                  70                  75                  80

ctt caa tgg agc agc ctg aaa gcg agc gat acg gcc atg tat tat tgc   288
Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
                 85                  90                  95

gcg cgt tgg ggc ggc gat ggc ttt tat gcg atg gat tat tgg ggc caa   336
Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

ggc acc ctg gtg acg gtt agc tca g                                361
Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 67
<211> 120
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V
heavy chain gene sequence

<400> 67
```
Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Glu
  1               5                  10                  15

Ser Leu Lys Ile Ser Cys Lys Gly Ser Gly Tyr Ser Phe Thr Ser Tyr
             20                  25                  30
```

```
Trp Ile Gly Trp Val Arg Gln Met Pro Gly Lys Gly Leu Glu Trp Met
         35                  40                  45

Gly Ile Ile Tyr Pro Gly Asp Ser Asp Thr Arg Tyr Ser Pro Ser Phe
     50                  55                  60

Gln Gly Gln Val Thr Ile Ser Ala Asp Lys Ser Ile Ser Thr Ala Tyr
 65                  70                  75                  80

Leu Gln Trp Ser Ser Leu Lys Ala Ser Asp Thr Ala Met Tyr Tyr Cys
                 85                  90                  95

Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100                 105                 110

Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 68
<211> 370
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<220>
<221> CDS
<222> (1)..(369)

<400> 68

```
cag gtg caa ttg caa cag tct ggt ccg ggc ctg gtg aaa ccg agc caa   48
Gln Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
  1               5                  10                  15

acc ctg agc ctg acc tgt gcg att tcc gga gat agc gtg agc agc aac   96
Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Ser Val Ser Ser Asn
             20                  25                  30

agc gcg gcg tgg aac tgg att cgc cag tct cct ggg cgt ggc ctc gag   144
Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro Gly Arg Gly Leu Glu
         35                  40                  45

tgg ctg ggc cgt acc tat tat cgt agc aaa tgg tat aac gat tat gcg   192
Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr Asn Asp Tyr Ala
     50                  55                  60

gtg agc gtg aaa agc cgg att acc atc aac ccg gat act tcg aaa aac   240
Val Ser Val Lys Ser Arg Ile Thr Ile Asn Pro Asp Thr Ser Lys Asn
 65                  70                  75                  80

cag ttt agc ctg caa ctg aac agc gtg acc ccg gaa gat acg gcc gtg   288
Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Val
                 85                  90                  95
```

```
tat tat tgc gcg cgt tgg ggc ggc gat ggc ttt tat gcg atg gat tat   336
Tyr Tyr Cys Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr
            100                 105                 110

tgg ggc caa ggc acc ctg gtg acg gtt agc tca g                     370
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 69
<211> 123
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic V heavy chain gene sequence

<400> 69

```
Gln Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
  1               5                  10                  15

Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Ser Val Ser Ser Asn
             20                  25                  30

Ser Ala Ala Trp Asn Trp Ile Arg Gln Ser Pro Gly Arg Gly Leu Glu
         35                  40                  45

Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr Asn Asp Tyr Ala
     50                  55                  60

Val Ser Val Lys Ser Arg Ile Thr Ile Asn Pro Asp Thr Ser Lys Asn
 65                  70                  75                  80

Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu Asp Thr Ala Val
                 85                  90                  95

Tyr Tyr Cys Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr
            100                 105                 110

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 70
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 70

```
gaatgcatac gctgatatcc agatgaccca gagcccgtct agcctgagc              49
```

<210> 71
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 71
cgctctgcag gtaatggtca cacgatcacc cacgctcgcg ctcaggctag acgggc 56

<210> 72
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 72
gaccattacc tgcagagcga gccagggcat tagcagctat ctggcgtggt accagcag 58

<210> 73
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 73
ctttgcaagc tgctggctgc ataaattaat agtttcggtg ctttacctgg tttctgctgg 60
taccacgcca g 71

<210> 74
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 74
cagccagcag cttgcaaagc ggggtcccgt cccgttttag cggctctgga tccggcactg 60
attttac 67

<210> 75
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 75
gataataggt cgcaaagtct tcaggttgca ggctgctaat ggtcagggta aaatcagtgc 60
cggatcc 67

<210> 76
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 76
cgatatcgtg atgacccaga gcccactgag cctgccagtg actccgggcg agcc 54

<210> 77
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 77
gccgttgcta tgcagcaggc tttggctgct tctgcagcta atgctcgcag gctcgcccgg 60
agtcac 66

<210> 78
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 78
ctgctgcata gcaacggcta taactatctg gattggtacc ttcaaaaacc aggtcaaagc 60
cc 62

<210> 79
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 79
cgatccggga ccccactggc acggttgctg cccagataaa ttaatagctg cgggctttga 60
cctggttttt g 71

<210> 80
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 80
agtggggtcc cggatcgttt tagcggctct ggatccggca ccgattttac cctgaaaatt 60
agccgtgtg 69

<210> 81
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 81
ccatgcaata atacacgccc acgtcttcag cttccacacg gctaattttc aggg 54

<210> 82
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 82
gaatgcatac gctgatatcg tgctgaccca gagcccgg 38

<210> 83
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 83
cgctctgcag ctcagggtcg cacgttcgcc cggagacagg ctcagggtcg ccgggctctg 60
ggtcagc 67

<210> 84
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 84
ccctgagctg cagagcgagc cagagcgtga gcagcagcta tctggcgtgg taccag 56

<210> 85
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 85
gcacggctgc tcgcgccata aattaataga cgcggtgctt gacctggttt ctgctggtac 60
cacgccagat ag 72

<210> 86
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 86
gcgcgagcag ccgtgcaact ggggtcccgg cgcgttttag cggctctgga tccggcacgg 60
attttac 67

<210> 87
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 87
gataatacac cgcaaagtct tcaggttcca ggctgctaat ggtcagggta aaatccgtgc 60
cggatc 66

<210> 88
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 88
gaatgcatac gctgatatcg tgatgaccca gagcccggat agcctggcg 49

<210> 89
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 89
gcttctgcag ttaatggtcg cacgttcgcc caggctcacc gccaggctat ccgggc 56

<210> 90
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 90
cgaccattaa ctgcagaagc agccagagcg tgctgtatag cagcaacaac aaaaactatc 60
tggcgtggta ccag 74

<210> 91
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 91
gatgcccaat aaattaatag tttcggcggc tgacctggtt tctgctggta ccacgccaga 60
tag 63

<210> 92
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 92
aaactattaa tttattgggc atccacccgt gaaagcgggg tcccggatcg ttttagcggc 60
tctggatccg gcac 74

<210> 93
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 93
gataatacac cgccacgtct tcagcttgca gggacgaaat ggtcagggta aaatcagtgc 60
cggatccaga gcc 73

<210> 94
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 94
gaatgcatac gctcagagcg tgctgaccca gccgccttca gtgagtgg 48

<210> 95
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 95
caatgttgct gctgctgccg ctacacgaga tggtcacacg ctgacctggt gcgccactca 60
ctgaaggcgg c 71

<210> 96
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 96
ggcagcagca gcaacattgg cagcaactat gtgagctggt accagcagtt gcccgggac 59

<210> 97
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 97
ccggcacgcc tgagggacgc tggttgttat cataaatcag cagtttcggc gccgtcccgg 60
gcaactgc 68

<210> 98
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 98
ccctcaggcg tgccggatcg ttttagcgga tccaaaagcg gcaccagcgc gagccttgcg 60

<210> 99
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 99
ccgcttcgtc ttcgctttgc aggcccgtaa tcgcaaggct cgcgctgg 48

<210> 100
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 100
gaatgcatac gctcagagcg cactgaccca gccagcttca gtgagcggc 49

<210> 101
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 101
cgctgctagt acccgtacac gagatggtaa tgctctgacc tggtgagccg ctcactgaag 60
ctgg 64

<210> 102
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 102
gtacgggtac tagcagcgat gtgggcggct ataactatgt gagctggtac cagcagcatc 60
ccgg 64

<210> 103
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 103
cgcctgaggg acggttgctc acatcataaa tcatcagttt cggcgccttc ccgggatgct 60
gctggtac 68

<210> 104
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 104
caaccgtccc tcaggcgtga gcaaccgttt tagcggatcc aaaagcggca acaccgcgag 60
cc 62

<210> 105
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 105
ccgcttcgtc ttccgcttgc aggccgctaa tggtcaggct cgcggtgttg ccg 53

<210> 106
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 106
gaatgcatac gctagctatg aactgaccca gccgccttca gtgagcg 47

<210> 107
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 107
cgcccagcgc atcgccgcta cacgagatac gcgcggtctg acctggtgca acgctcactg 60
aaggcggc 68

<210> 108
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 108
ggcgatgcgc tgggcgataa atacgcgagc tggtaccagc agaaacccgg gcaggcgc 58

<210> 109
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 109
gcgttccggg atgcctgagg gacggtcaga atcatcataa atcaccagaa ctggcgcctg 60
cccgggtttc 70

<210> 110
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 110
caggcatccc ggaacgcttt agcggatcca acagcggcaa caccgcgacc ctgaccatta 60
gcgg 64

<210> 111
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 111
ccgcttcgtc ttccgcctga gtgccgctaa tggtcagggt c 41

<210> 112
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 112
gctcttcacc cctgttacca aagcccaggt gcaattg 37

<210> 113
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 113
ggctttgcag ctcactttca cgctgctgcc cggttttttc acttccgcgc cagactgaac 60
caattgcacc tgggctttg 79

<210> 114
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 114
gaaagtgagc tgcaaagcct ccggaggcac ttttagcagc tatgcgatta gctgggtgcg 60
ccaagcccct gggcagggtc 80

<210> 115
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 115
gccctgaaac ttctgcgcgt agttcgccgt gccaaaaatc ggaataatgc cgcccatcca 60
ctcgagaccc tgcccagggg c 81

<210> 116
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 116
gcgcagaagt ttcagggccg ggtgaccatt accgcggatg aaagcaccag caccgcgtat 60
atggaactga gcagcctgcg 80

<210> 117
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 117
gcgcgcaata atacacggcc gtatcttcgc tacgcaggct gctcagttcc 50

<210> 118
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 118
ggctttgcag ctcactttca cgctcgcgcc cggtttttttc acttccgcgc cgctctgaac 60
caattgcacc tgggctttg 79

<210> 119
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 119
gaaagtgagc tgcaaagcct ccggatatac ctttaccagc tattatatgc actgggtccg 60
ccaagcccct gggcagggtc 80

<210> 120
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 120
gccctgaaac ttctgcgcgt agttcgtgcc gccgctattc gggttaatcc agcccatcca 60
ctcgagaccc tgcccagggg c 81

<210> 121
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 121
gcgcagaagt ttcagggccg ggtgaccatg acccgtgata ccagcattag caccgcgtat 60
atggaactga gcagcctgcg 80

<210> 122
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 122
ggtacaggtc agggtcaggg tttgggtcgg tttcaccagg gccgggccgc tttctttcaa 60
ttgcacctgg gctttg 76

<210> 123
<211> 85
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 123
ctgaccctga cctgtacctt ttccggattt agcctgtcca cgtctggcgt tggcgtgggc 60
tggattcgcc agccgcctgg gaaag 85

<210> 124
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 124
gcgttttcag gctggtgcta taatacttat catcatccca atcaatcaga gccagccact 60
cgagggcttt cccaggcggc tgg 83

<210> 125
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 125
gcaccagcct gaaaacgcgt ctgaccatta gcaaagatac ttcgaaaaat caggtggtgc 60
tgactatgac caacatgg 78

<210> 126
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 126
gcgcgcaata ataggtggcc gtatccaccg ggtccatgtt ggtcatagtc agc 53

<210> 127
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 127
cgaagtgcaa ttggtggaaa gcggcggcgg cctggtgcaa ccgggcggca g 51

<210> 128
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 128
catagctgct aaaggtaaat ccggaggccg cgcagctcag acgcaggctg ccgcccggtt 60
gcac 64

<210> 129
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 129
gatttacctt tagcagctat gcgatgagct gggtgcgcca agcccctggg aagggtctcg 60
agtgggtgag 70

<210> 130
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 130
ggcctttcac gctatccgca taataggtgc tgccgccgct accgctaatc gcgctcaccc 60
actcgagacc c 71

<210> 131
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 131
cggatagcgt gaaaggccgt tttaccattt cacgtgataa ttcgaaaaac accctgtatc 60
tgcaaatgaa cag 73

<210> 132
<211> 62
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 132
cacgcgcgca ataatacacg gccgtatctt ccgcacgcag gctgttcatt tgcagataca 60
gg 62

<210> 133
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 133
ggtcaggctc agggtttcgc tcggtttcac caggcccgga ccactttctt gcaattgcac 60
ctgggctttg 70

<210> 134
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 134
gaaaccctga gcctgacctg caccgtttcc ggaggcagca ttagcagcta ttattggagc 60
tggattcgcc agccgc 76

<210> 135
<211> 77
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 135
gattatagtt ggtgctgccg ctataataaa tatagccaat ccactcgaga cccttcccag 60
gcggctggcg aatccag 77

<210> 136
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 136
cggcagcacc aactataatc cgagcctgaa aagccgggtg accattagcg ttgatacttc 60
gaaaaaccag tttagcctg 79

<210> 137
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 137
gcgcgcaata atacacggcc gtatccgccg ccgtcacgct gctcagtttc aggctaaact 60
ggtttttcg 69

<210> 138
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 138
gctcttcacc cctgttacca aagccgaagt gcaattg 37

<210> 139
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 139
cctttgcagc taattttcag gctttcgccc ggtttttttca cttccgcgcc gctctgaacc 60
aattgcactt cggctttgg 79

<210> 140
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 140
cctgaaaatt agctgcaaag gttccggata ttcctttacg agctattgga ttggctgggt 60
gcgccagatg cctgg 75

<210> 141
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 141
cggagaataa cgggtatcgc tatcgcccgg ataaataatg cccatccact cgagaccctt 60
cccaggcatc tggcgcac 78

<210> 142
<211> 77
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 142
cgatacccgt tattctccga gctttcaggg ccaggtgacc attagcgcgg ataaaagcat 60
tagcaccgcg tatcttc 77

<210> 143
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 143
gcgcgcaata atacatggcc gtatcgctcg ctttcaggct gctccattga agatacgcgg 60
tgctaatg 68

<210> 144
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 144
gaaatcgcac aggtcaggct cagggtttgg ctcggtttca ccaggcccgg accagactgt 60
tgcaattgca cctgggcttt g 81

<210> 145
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 145
gcctgacctg tgcgatttcc ggagatagcg tgagcagcaa cagcgcggcg tggaactgga 60
ttcgccagtc tcctgggcg 79

<210> 146
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 146
caccgcataa tcgttatacc atttgctacg ataataggta cggcccagcc actcgaggcc 60
acgcccagga gactggcg 78

<210> 147
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 147
ggtataacga ttatgcggtg agcgtgaaaa gccggattac catcaacccg gatacttcga 60
aaaaccagtt tagcctgc 78

<210> 148
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 148
gcgcgcaata atacacggcc gtatcttccg gggtcacgct gttcagttgc aggctaaact 60
ggtttttc 68

<210> 149
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 149
ggctgaagac gtgggcgtgt attattgcca gcagcattat accaccccgc cgacctttgg 60

ccagggtac 69

<210> 150
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 150
gcggaaaaat aaacacgctc ggagcagcca ccgtacgttt aatttcaact ttcgtaccct 60
ggccaaaggt c 71

<210> 151
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 151
gagcgtgttt atttttccgc cgagcgatga acaactgaaa agcggcacgg cgagcgtggt 60
gtgcctgctg 70

<210> 152
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 152
cagcgcgttg tctactttcc actgaacttt cgcttcacgc ggataaaagt tgttcagcag 60
gcacaccacg c 71

<210> 153
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 153
gaaagtagac aacgcgctgc aaagcggcaa cagccaggaa agcgtgaccg aacaggatag 60
caaagatag 69

<210> 154
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 154
gtttttcata atccgctttg ctcagggtca gggtgctgct cagagaatag gtgctatctt 60
tgctatcctg ttcg 74

<210> 155
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 155
gcaaagcgga ttatgaaaaa cataaagtgt atgcgtgcga agtgacccat caaggtctga 60
gcagcccggt g 71

<210> 156
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 156
ggcatgctta tcaggcctcg ccacgattaa aagatttagt caccgggctg ctcagac 57

<210> 157
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 157
ggcgtctaga ggccaaggca ccctggtgac ggttagctca gcgtcgac 48

<210> 158
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 158
gtgcttttgc tgctcggagc cagcggaaac acgcttggac ctttggtcga cgctgagcta 60
acc 63

<210> 159
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 159
ctccgagcag caaaagcacc agcggcggca cggctgccct gggctgcctg gttaaagatt 60
atttcc 66

<210> 160
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 160
ctggtcagcg ccccgctgtt ccagctcacg gtgactggtt ccgggaaata atctttaacc 60
aggca 65

<210> 161
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 161
agcggggcgc tgaccagcgg cgtgcatacc tttccggcgg tgctgcaaag cagcggcctg 60

<210> 162
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 162
gtgcctaagc tgctgctcgg cacggtcaca acgctgctca ggctatacag gccgctgctt 60
tgcag 65

<210> 163
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 163
gagcagcagc ttaggcactc agacctatat ttgcaacgtg aaccataaac cgagcaacac 60
c 61

<210> 164
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 164
gcgcgaattc gcttttcggt tccacttttt tatccacttt ggtgttgctc ggtttatgg 59

<210> 165
<211> 333
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic C kappa gene sequence

<220>
<221> CDS
<222> (7)..(321)

<400> 165
cgtacg gtg gct gct ccg agc gtg ttt att ttt ccg ccg agc gat gaa 48
Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
1 5 10

```
caa ctg aaa agc ggc acg gcg agc gtg gtg tgc ctg ctg aac aac ttt   96
Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe
 15                  20                  25                  30

tat ccg cgt gaa gcg aaa gtt cag tgg aaa gta gac aac gcg ctg caa   144
Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln
                 35                  40                  45

agc ggc aac agc cag gaa agc gtg acc gaa cag gat agc aaa gat agc   192
Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser
             50                  55                  60

acc tat tct ctg agc agc acc ctg acc ctg agc aaa gcg gat tat gaa   240
Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu
         65                  70                  75

aaa cat aaa gtg tat gcg tgc gaa gtg acc cat caa ggt ctg agc agc   288
Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser
     80                  85                  90

ccg gtg act aaa tct ttt aat cgt ggc gag gcc tgataagcat gc         333
Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Ala
 95                  100                 105
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<210> 166
<211> 105
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic C kappa gene sequence

<400> 166

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Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu
  1               5                  10                  15

Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro
             20                  25                  30

Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly
         35                  40                  45

Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr
     50                  55                  60

Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His
 65                  70                  75                  80

Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val
                 85                  90                  95

Thr Lys Ser Phe Asn Arg Gly Glu Ala
             100                 105
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<210> 167
<211> 327
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic CH1
gene sequence

<220>
<221> CDS
<222> (6)..(317)

<400> 167
gctca gcg tcg acc aaa ggt cca agc gtg ttt ccg ctg gct ccg agc agc 50
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser
1 5 10 15

aaa agc acc agc ggc ggc acg gct gcc ctg ggc tgc ctg gtt aaa gat 98
Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp
20 25 30

tat ttc ccg gaa cca gtc acc gtg agc tgg aac agc ggg gcg ctg acc 146
Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr
35 40 45

agc ggc gtg cat acc ttt ccg gcg gtg ctg caa agc agc ggc ctg tat 194
Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr
50 55 60

agc ctg agc agc gtt gtg acc gtg ccg agc agc agc tta ggc act cag 242
Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln
65 70 75

acc tat att tgc aac gtg aac cat aaa ccg agc aac acc aaa gtg gat 290
Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp
80 85 90 95

aaa aaa gtg gaa ccg aaa agc gaa ttc tgataagctt 327
Lys Lys Val Glu Pro Lys Ser Glu Phe
100

<210> 168
<211> 104
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic CH1
gene sequence

<400> 168
Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys
1 5 10 15

Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr
20 25 30

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser
35 40 45

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser
50 55 60

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr
65 70 75 80

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys
85 90 95

Lys Val Glu Pro Lys Ser Glu Phe
100

<210> 169
<211> 408
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic C lambda gene segment

<220>
<221> CDS
<222> (85)..(396)

<400> 169
gaagacgaag cggattatta ttgccagcag cattatacca ccccgcctgt gtttggcggc 60

ggcacgaagt taaccgttct tggc cag ccg aaa gcc gca ccg agt gtg acg 111
Gln Pro Lys Ala Ala Pro Ser Val Thr
1 5

ctg ttt ccg ccg agc agc gaa gaa ttg cag gcg aac aaa gcg acc ctg 159
Leu Phe Pro Pro Ser Ser Glu Glu Leu Gln Ala Asn Lys Ala Thr Leu
10 15 20 25

gtg tgc ctg att agc gac ttt tat ccg gga gcc gtg aca gtg gcc tgg 207
Val Cys Leu Ile Ser Asp Phe Tyr Pro Gly Ala Val Thr Val Ala Trp
30 35 40

aag gca gat agc agc ccc gtc aag gcg gga gtg gag acc acc aca ccc 255
Lys Ala Asp Ser Ser Pro Val Lys Ala Gly Val Glu Thr Thr Thr Pro
45 50 55

tcc aaa caa agc aac aac aag tac gcg gcc agc agc tat ctg agc ctg 303
Ser Lys Gln Ser Asn Asn Lys Tyr Ala Ala Ser Ser Tyr Leu Ser Leu
60 65 70

```
acg cct gag cag tgg aag tcc cac aga agc tac agc tgc cag gtc acg   351
Thr Pro Glu Gln Trp Lys Ser His Arg Ser Tyr Ser Cys Gln Val Thr
     75                  80                  85

cat gag ggg agc acc gtg gaa aaa acc gtt gcg ccg act gag gcc       396
His Glu Gly Ser Thr Val Glu Lys Thr Val Ala Pro Thr Glu Ala
 90                  95                 100

tgataagcat gc                                                    408
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<210> 170
<211> 104
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic C lambda gene segment

<400> 170

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Gln Pro Lys Ala Ala Pro Ser Val Thr Leu Phe Pro Pro Ser Ser Glu
  1               5                  10                  15

Glu Leu Gln Ala Asn Lys Ala Thr Leu Val Cys Leu Ile Ser Asp Phe
             20                  25                  30

Tyr Pro Gly Ala Val Thr Val Ala Trp Lys Ala Asp Ser Ser Pro Val
         35                  40                  45

Lys Ala Gly Val Glu Thr Thr Thr Pro Ser Lys Gln Ser Asn Asn Lys
     50                  55                  60

Tyr Ala Ala Ser Ser Tyr Leu Ser Leu Thr Pro Glu Gln Trp Lys Ser
 65                  70                  75                  80

His Arg Ser Tyr Ser Cys Gln Val Thr His Glu Gly Ser Thr Val Glu
                 85                  90                  95

Lys Thr Val Ala Pro Thr Glu Ala
            100
```

<210> 171
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 171

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gaagacaagc ggattattat tgccagcagc attataccac cccgcctgtg tttggcggcg 60
gcacgaagtt aaccgttc                                               78
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<210> 172
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 172
caattcttcg ctgctcggcg gaaacagcgt cacactcggt gcggctttcg gctggccaag 60
aacggttaac ttcgtgccgc 80

<210> 173
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 173
cgccgagcag cgaagaattg caggcgaaca aagcgaccct ggtgtgcctg attagcgact 60
tttatccggg agccgtgaca 80

<210> 174
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 174
tgtttggagg gtgtggtggt ctccactccc gccttgacgg ggctgctatc tgccttccag 60
gccactgtca cggctcccgg 80

<210> 175
<211> 94
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 175
ccacaccctc caaacaaagc aacaacaagt acgcggccag cagctatctg agcctgacgc 60
ctgagcagtg gaagtcccac agaagctaca gctg 94

<210> 176
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 176
gcatgcttat caggcctcag tcggcgcaac ggtttttttcc acggtgctcc cctcatgcgt 60
gacctggcag ctgtagcttc 80

<210> 177
<211> 843
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
single chain fragment VH3-V kappa 2

<220>
<221> CDS
<222> (1)..(843)

<400> 177
atg aaa caa agc act att gca ctg gca ctc tta ccg ttg ctc ttc acc 48
Met Lys Gln Ser Thr Ile Ala Leu Ala Leu Leu Pro Leu Leu Phe Thr
1 5 10 15

cct gtt acc aaa gcc gac tac aaa gat gaa gtg caa ttg gtg gaa agc 96
Pro Val Thr Lys Ala Asp Tyr Lys Asp Glu Val Gln Leu Val Glu Ser
20 25 30

ggc ggc ggc ctg gtg caa ccg ggc ggc agc ctg cgt ctg agc tgc gcg 144
Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala
35 40 45

gcc tcc gga ttt acc ttt agc agc tat gcg atg agc tgg gtg cgc caa 192
Ala Ser Gly Phe Thr Phe Ser Ser Tyr Ala Met Ser Trp Val Arg Gln
50 55 60

gcc cct ggg aag ggt ctc gag tgg gtg agc gcg att agc ggt agc ggc 240
Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Ala Ile Ser Gly Ser Gly
65 70 75 80

ggc agc acc tat tat gcg gat agc gtg aaa ggc cgt ttt acc att tca 288
Gly Ser Thr Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser
85 90 95

cgt gat aat tcg aaa aac acc ctg tat ctg caa atg aac agc ctg cgt 336
Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg
100 105 110

```
gcg gaa gat acg gcc gtg tat tat tgc gcg cgt tgg ggc ggc gat ggc   384
Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Trp Gly Gly Asp Gly
        115                 120                 125

ttt tat gcg atg gat tat tgg ggc caa ggc acc ctg gtg acg gtt agc   432
Phe Tyr Ala Met Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
    130                 135                 140

tca gcg ggt ggc ggt tct ggc ggc ggt ggg agc ggt ggc ggt ggt tct   480
Ser Ala Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
145                 150                 155                 160

ggc ggt ggt ggt tcc gat atc gtg atg acc cag agc cca ctg agc ctg   528
Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu
                165                 170                 175

cca gtg act ccg ggc gag cct gcg agc att agc tgc aga agc agc caa   576
Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln
            180                 185                 190

agc ctg ctg cat agc aac ggc tat aac tat ctg gat tgg tac ctt caa   624
Ser Leu Leu His Ser Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln
        195                 200                 205

aaa cca ggt caa agc ccg cag cta tta att tat ctg ggc agc aac cgt   672
Lys Pro Gly Gln Ser Pro Gln Leu Leu Ile Tyr Leu Gly Ser Asn Arg
    210                 215                 220

gcc agt ggg gtc ccg gat cgt ttt agc ggc tct gga tcc ggc acc gat   720
Ala Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
225                 230                 235                 240

ttt acc ctg aaa att agc cgt gtg gaa gct gaa gac gtg ggc gtg tat   768
Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr
                245                 250                 255

tat tgc cag cag cat tat acc acc ccg ccg acc ttt ggc cag ggt acg   816
Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr
            260                 265                 270

aaa gtt gaa att aaa cgt acg gaa ttc                               843
Lys Val Glu Ile Lys Arg Thr Glu Phe
        275                 280
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<210> 178
<211> 281
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
single chain fragment VH3-V kappa 2

<400> 178

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Met Lys Gln Ser Thr Ile Ala Leu Ala Leu Leu Pro Leu Leu Phe Thr
  1               5                  10                  15
```

```
Pro Val Thr Lys Ala Asp Tyr Lys Asp Glu Val Gln Leu Val Glu Ser
            20                  25                  30

Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala
        35                  40                  45

Ala Ser Gly Phe Thr Phe Ser Ser Tyr Ala Met Ser Trp Val Arg Gln
    50                  55                  60

Ala Pro Gly Lys Gly Leu Glu Trp Val Ser Ala Ile Ser Gly Ser Gly
65                  70                  75                  80

Gly Ser Thr Tyr Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser
                85                  90                  95

Arg Asp Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg
            100                 105                 110

Ala Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Trp Gly Gly Asp Gly
        115                 120                 125

Phe Tyr Ala Met Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
    130                 135                 140

Ser Ala Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
145                 150                 155                 160

Gly Gly Gly Gly Ser Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu
                165                 170                 175

Pro Val Thr Pro Gly Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Gln
            180                 185                 190

Ser Leu Leu His Ser Asn Gly Tyr Asn Tyr Leu Asp Trp Tyr Leu Gln
        195                 200                 205

Lys Pro Gly Gln Ser Pro Gln Leu Leu Ile Tyr Leu Gly Ser Asn Arg
    210                 215                 220

Ala Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
225                 230                 235                 240

Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr
                245                 250                 255

Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro Thr Phe Gly Gln Gly Thr
            260                 265                 270

Lys Val Glu Ile Lys Arg Thr Glu Phe
        275                 280
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<210> 179
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 179
Cys Ala Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp
1 5 10 15

<210> 180
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 180
Cys Ala Arg Phe Gly Lys Met Asn Tyr Asp Tyr Trp
1 5 10

<210> 181
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 181
Cys Ala Arg His Arg Thr Glu Trp His Asp Tyr Trp
1 5 10

<210> 182
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 182
Cys Ala Arg Val Arg Glu Leu Tyr His Asp Tyr Trp
1 5 10

<210> 183
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 183
Cys Ala Arg Lys Phe Leu Lys Ala Arg Asp Tyr Trp
1 5 10

<210> 184
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 184
Cys Ala Arg Trp Asn Thr Thr Gly Tyr Asp Tyr Trp
1 5 10

<210> 185
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 185
Cys Ala Arg Ile Asn Glu Ala Gln Pro Asp Tyr Trp
1 5 10

<210> 186
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 186
Cys Ala Arg Thr Ala Ile Thr Arg Asp Tyr Trp
1 5 10

<210> 187
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 187
Cys Ala Arg Trp Tyr Asn Arg Asn Ser Asp Tyr Trp
1 5 10

<210> 188
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 188
Cys Ala Arg Ser Val Gly Asp Ser Lys Asp Tyr Trp
1 5 10

<210> 189
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 189
Cys Ala Arg Ser Lys Thr Phe Ala Ala Asp Tyr Trp
1 5 10

<210> 190
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 190
Cys Ala Arg Val Ala Pro Gln Tyr Asp Asp Tyr Trp
1 5 10

<210> 191
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 191
Cys Ala Arg Met Gln Ser Glu Trp Met Asp Tyr Trp
1 5 10

<210> 192
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 192
Cys Ala Arg Tyr Phe Val His Phe Leu Tyr Thr Met Val Met Asp Val
1 5 10 15

Trp

<210> 193
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 193
Cys Ala Arg Met Ala Leu Arg Ala Ser Gly Lys Tyr Ile Met Asp Val
1 5 10 15

Trp

<210> 194
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 194
Cys Ala Arg Lys Asn Gln Met Val Phe His Ala Arg Lys Phe Asp Val
1 5 10 15

Trp

<210> 195
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 195
Cys Ala Arg Thr Gln Ser Phe Trp Glu Gln Gln Lys Val Met Asp Tyr
1 5 10 15

Trp

<210> 196
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 196
Cys Ala Arg Tyr Pro Tyr Arg Ser Asn Phe Phe Met Pro Met Asp Val
1 5 10 15

Trp

<210> 197
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 197
Cys Ala Arg Gly Ser Gly Ser Glu His Trp Ser Ile Phe Asp Val Trp
1 5 10 15

<210> 198
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 198
Cys Ala Arg Arg Asn Pro Trp Asn Val Asn Tyr Leu His Phe Asp Val
1 5 10 15

Trp

<210> 199
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 199
Cys Ala Arg Met Lys Pro Met Leu Asn Arg Asp Gly Thr Met Asp Val
1 5 10 15

Trp

<210> 200
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 200
Cys Ala Arg Lys Gly Ser Glu Phe Leu Glu Thr Asp Val Met Asp Tyr
1 5 10 15

Trp

<210> 201
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 201
Cys Ala Arg Ser Trp Thr Asn Asp Lys Pro Asn Phe Ile Met Asp Val
1 5 10 15

Trp

<210> 202
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 202
Cys Ala Arg Tyr Ala Gly Thr Thr Phe Lys Gln Gly Pro Met Asp Tyr
1 5 10 15

Trp

<210> 203
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 203
Cys Ala Arg Lys Arg Met Met Gln Asn Pro Arg Phe Arg Phe Asp Val
1 5 10 15

Trp

<210> 204
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 204
Cys Ala Arg Arg Ser Lys Gln Lys Arg Lys Met Arg Arg Phe Asp Val
1 5 10 15

Trp

<210> 205
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 205
Cys Ala Arg Arg Asn Gly Lys Arg His Leu Arg His Arg Phe Asp Val
1 5 10 15

Trp

<210> 206
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 206
Cys Ala Arg Arg Lys Met Arg Lys Arg Ile Lys Arg Arg Phe Asp Val
1 5 10 15

Trp

<210> 207
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 207
Cys Ala Arg Tyr Arg Lys Ile Met Lys Trp Lys Asn Ser Phe Asp Val
1 5 10 15

Trp

<210> 208
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 208
Cys Ala Arg Leu Ile Glu Val His Pro Ser Phe Asp Gln Met Asp Val
1 5 10 15

Trp

<210> 209
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 209
Cys Ala Arg Arg Lys Pro Met Phe Leu Lys Lys Ala Val Phe Asp Val
1 5 10 15

Trp

<210> 210
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 210
Cys Ala Arg Arg Lys Phe His Arg Tyr Ser Thr Val Lys Phe Asp Tyr
1 5 10 15

Trp

<210> 211
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 211
Cys Ala Arg Arg Lys Thr Met Arg Ser Arg Val Lys Tyr Phe Asp Tyr
1 5 10 15

Trp

<210> 212
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 212
Cys Ala Arg Lys Lys Arg Ser Trp Arg Arg Met Asp Arg Phe Asp Val
1 5 10 15

Trp

<210> 213
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 213
Cys Ala Arg Arg Asn Pro Arg Arg Gly Arg Met Asn Arg Phe Asp Val
1 5 10 15

Trp

<210> 214
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 214
Cys Ala Arg Lys Gly Lys Lys Lys Phe Ala Arg Pro Arg Phe Asp Val
1 5 10 15

Trp

<210> 215
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 215
Cys Ala Arg Arg Met Val His Lys Gly Lys Arg Lys Ile Phe Asp Val
1 5 10 15

Trp

<210> 216
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 216
Cys Ala Arg Arg Lys His Ile Thr Tyr Pro Arg Lys Gln Phe Asp Val
1 5 10 15

Trp

<210> 217
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 217
Cys Ala Arg Arg Trp Thr Lys Arg Arg Ser Phe Ala Arg Phe Asp Val
1 5 10 15

Trp

<210> 218
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 218
Cys Ala Arg Lys Lys Leu Lys Gln Tyr Thr Phe Ser Arg Phe Asp Tyr
1 5 10 15

Trp

<210> 219
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 219
Cys Ala Arg Thr Arg Pro Trp Gln Ala Thr Arg Lys Gly Phe Asp Val
1 5 10 15

Trp

<210> 220
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 220
Cys Ala Arg Asn Gln Trp Glu Phe Lys Asn Arg Arg Lys Met Asp Tyr
1 5 10 15

Trp

<210> 221
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 221
Cys Ala Arg Lys Arg Trp Met Trp Pro Ile Gly Lys Arg Phe Asp Tyr
1 5 10 15

Trp

<210> 222
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 222
Cys Ala Arg Tyr Ser Leu Trp Arg Leu Asp Glu Tyr Phe Phe Asp Tyr
1 5 10 15

Trp

<210> 223
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 223
Cys Ala Arg Val Pro Trp Gly Asp Phe Trp Ser Trp His Met Asp Val
1 5 10 15

Trp

<210> 224
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 224
Cys Ala Arg Asn Gly Leu Glu Pro Arg His Arg Lys Met Met Asp Tyr
1 5 10 15

Trp

<210> 225
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 225
Cys Ala Arg Ile Met Lys Ala Pro Pro Asp Tyr Trp
1 5 10

<210> 226
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 226
Cys Ala Arg Arg Lys Thr Trp His Trp Phe Tyr Lys Arg Met Asp Tyr
1 5 10 15

Trp

<210> 227
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 227
Cys Ala Arg Trp Lys Asp Met Trp Ser Gln Val Tyr Val Met Asp Tyr
1 5 10 15

Trp

<210> 228
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 228
Cys Ala Arg Asn Lys Gln Gln Met Arg Phe Arg Arg Phe Met Asp Tyr
1 5 10 15

Trp

<210> 229
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 229
Cys Ala Arg Asn Met Leu Ala Leu Ser Arg Gly Lys Glu Met Asp Val
1 5 10 15

Trp

<210> 230
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 230
Cys Ala Arg Asn Met Arg Leu Met Arg Met Arg Lys Asn Phe Asp Val
1 5 10 15

Trp

<210> 231
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 231
Cys Ala Arg Tyr Ile Lys Gln Ala Lys Arg Lys Leu Ala Phe Asp Tyr
1 5 10 15

Trp

<210> 232
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 232
Cys Ala Arg Tyr Asn Arg His Ala Trp Gln Lys Met Gln Phe Asp Tyr
1 5 10 15

Trp

<210> 233
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 233
Cys Ala Arg Tyr Val Lys Tyr Ala Arg Asn Lys Met Gln Phe Asp Tyr
1 5 10 15

Trp

<210> 234
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 234
Cys Ala Arg Tyr Lys Arg Gly Ala Trp Met Lys Thr Met Phe Asp Val
1 5 10 15

Trp

<210> 235
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 235
Cys Ala Arg Arg Lys Pro Leu Arg Arg Ile Met Lys Trp Phe Asp Tyr
1 5 10 15

Trp

<210> 236
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 236
Cys Ala Arg Tyr Arg Lys Arg Ala Ser Arg Gln Met Gln Phe Asp Tyr
1 5 10 15

Trp

<210> 237
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 237
Cys Ala Arg Gln Arg Tyr Arg Ser Lys Ile Lys Gly His Phe Asp Val
1 5 10 15

Trp

<210> 238
<211> 16
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 238
Cys Ala Arg Trp Arg Asp Phe Asn Ser Tyr Asp Pro Met Asp Tyr Trp
1 5 10 15

<210> 239
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 239
Cys Ala Arg Met Ala Asp Leu Asp Asn Tyr Trp Val Gln Phe Asp Tyr
1 5 10 15

Trp

<210> 240
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 240
Cys Ala Arg Leu Gln Ala Tyr Leu Lys Pro His His Trp Met Asp Tyr
1 5 10 15

Trp

<210> 241
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 241
Cys Ala Arg Arg Leu Ile Glu Gln Ala Arg Asp His Val Met Asp Tyr
1 5 10 15

Trp

<210> 242
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 242
Cys Ala Arg Ser Trp His Asn Ser Gln Phe Thr Gln Ser Phe Asp Val
1 5 10 15

Trp

<210> 243
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 243
Cys Ala Arg Val Asp His Phe Gln Thr Glu Asn Glu Trp Met Asp Tyr
1 5 10 15

Trp

<210> 244
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 244
Cys Ala Arg Asp Trp Pro Thr Leu Ile Phe Trp Tyr Trp Phe Asp Tyr
1 5 10 15

Trp

<210> 245
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 245
Cys Ala Arg Gly Phe Gly Phe Thr Glu Asp Tyr Trp
1 5 10

<210> 246
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 246
Cys Ala Arg Gln Phe Asp Glu Asp Ser Phe Val Arg Arg Phe Asp Val
1 5 10 15

Trp

<210> 247
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 247
Cys Ala Arg Ile Leu Lys Glu Ser Ser Lys Ser Arg Gln Met Asp Val
1 5 10 15

Trp

<210> 248
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 248
Cys Ala Arg Glu Gln Asp Glu Tyr Gly Ala Ile Arg Ile Met Asp Tyr
1 5 10 15

Trp

<210> 249
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 249
Cys Ala Arg Asn His Phe Glu Ala Ser Trp Pro Arg Arg Gln Met Asp
1 5 10 15

Val Trp

<210> 250
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 250
Cys Ala Arg Glu Asn Glu Trp Val Asp Met Ile Leu Asp Met Asp Tyr
1 5 10 15

Trp

<210> 251
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 251
Cys Ala Arg Gln Tyr Ser Glu Thr Arg Trp Val Arg Lys Phe Asp Tyr
1 5 10 15

Trp

<210> 252
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 252
Cys Ala Arg Gln Phe Lys Glu Ser Lys Thr Arg Arg Lys Phe Asp Val
1 5 10 15

Trp

<210> 253
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 253
Cys Ala Arg Lys Lys Thr Gln Tyr Val His Asp Trp Arg Met Asp Val
1 5 10 15

Trp

<210> 254
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 254
Cys Ala Arg Arg Trp Arg Glu Thr Lys Ser Lys Arg Phe Phe Asp Val
1 5 10 15

Trp

<210> 255
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 255
Cys Ala Arg Asp Tyr Ile Met Glu Phe Asp Tyr Trp
1 5 10

<210> 256
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 256
Cys Ala Arg Gln Phe Glu Glu Thr Lys Gln Arg Arg Leu Met Asp Tyr
1 5 10 15

Trp

<210> 257
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 257
Cys Ala Arg Asp Gln Gly Phe Tyr Ala Ile Asp Tyr Val Met Asp Tyr
1 5 10 15

Trp

<210> 258
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 258
Cys Ala Arg Val Phe Thr Tyr Met Tyr Asn Tyr Phe Arg Phe Asp Val
1 5 10 15

Trp

<210> 259
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 259
Cys Ala Arg Val Phe Phe Glu Gln Met Glu Val Val Arg Met Asp Val
1 5 10 15

Trp

<210> 260
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 260
Cys Ala Arg Glu Lys Glu Tyr Arg Leu Ser Trp Ser Gln Met Asp Tyr
1 5 10 15

Trp

<210> 261
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 261
Cys Ala Arg Tyr Pro Ser Arg Trp Ala Pro Asn Trp Tyr Met Asp Tyr
1 5 10 15

Trp

<210> 262
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 262
Cys Ala Arg Asp Gly Gly Phe Lys Pro Leu Thr His Phe Phe Asp Val
1 5 10 15

Trp

<210> 263
<211> 143
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 263
acatgtaagc ttccccccc ccttaattaa ccccccccc tgtacacccc ccccccgcta 60
gccccccccc ccagatctcc ccccccccga cgtccccct ctagaccccc ccccgcatg 120
ccccccccc cgaattcgac gtc 143

<210> 264
<211> 1947
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
vector

<220>
<221> CDS
<222> (132)..(989)

<400> 264
caggtggcac ttttcgggga aatgtgcgcg gaacccctat ttgtttattt ttctaaatac 60

attcaaatat gtatccgctc atgagacaat aaccctgata aatgcttcaa taatattgaa 120

aaaggaagag t atg agt att caa cat ttc cgt gtc gcc ctt att ccc ttt 170
Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe
1 5 10

ttt gcg gca ttt tgc ctt cct gtt ttt gct cac cca gaa acg ctg gtg 218
Phe Ala Ala Phe Cys Leu Pro Val Phe Ala His Pro Glu Thr Leu Val
15 20 25

aaa gta aaa gat gct gaa gat cag ttg ggt gca cga gtg ggt tac atc 266
Lys Val Lys Asp Ala Glu Asp Gln Leu Gly Ala Arg Val Gly Tyr Ile
30 35 40 45

gaa ctg gat ctc aac agc ggt aag atc ctt gag agt ttt cgc ccc gaa 314
Glu Leu Asp Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe Arg Pro Glu
50 55 60

gaa cgt ttt cca atg atg agc act ttt aaa gtt ctg cta tgt ggc gcg 362
Glu Arg Phe Pro Met Met Ser Thr Phe Lys Val Leu Leu Cys Gly Ala
65 70 75

gta tta tcc cgt att gac gcc ggg caa gag caa ctc ggt cgc cgc ata 410
Val Leu Ser Arg Ile Asp Ala Gly Gln Glu Gln Leu Gly Arg Arg Ile
80 85 90

cac tat tct cag aat gac ttg gtt gag tac tca cca gtc aca gaa aag 458
His Tyr Ser Gln Asn Asp Leu Val Glu Tyr Ser Pro Val Thr Glu Lys
95 100 105

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cat ctt acg gat ggc atg aca gta aga gaa tta tgc agt gct gcc ata   506
His Leu Thr Asp Gly Met Thr Val Arg Glu Leu Cys Ser Ala Ala Ile
110                 115                 120                 125

acc atg agt gat aac act gcg gcc aac tta ctt ctg aca acg atc gga   554
Thr Met Ser Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr Thr Ile Gly
                130                 135                 140

gga ccg aag gag cta acc gct ttt ttg cac aac atg ggg gat cat gta   602
Gly Pro Lys Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val
            145                 150                 155

act cgc ctt gat cgt tgg gaa ccg gag ctg aat gaa gcc ata cca aac   650
Thr Arg Leu Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn
        160                 165                 170

gac gag cgt gac acc acg atg cct gta gca atg gca aca acg ttg cgc   698
Asp Glu Arg Asp Thr Thr Met Pro Val Ala Met Ala Thr Thr Leu Arg
    175                 180                 185

aaa cta tta act ggc gaa cta ctt act cta gct tcc cgg caa caa tta   746
Lys Leu Leu Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu
190                 195                 200                 205

ata gac tgg atg gag gcg gat aaa gtt gca gga cca ctt ctg cgc tcg   794
Ile Asp Trp Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser
                210                 215                 220

gcc ctt ccg gct ggc tgg ttt att gct gat aaa tct gga gcc ggt gag   842
Ala Leu Pro Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu
            225                 230                 235

cgt ggg tct cgc ggt atc att gca gca ctg ggg cca gat ggt aag ccc   890
Arg Gly Ser Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro
        240                 245                 250

tcc cgt atc gta gtt atc tac acg acg ggg agt cag gca act atg gat   938
Ser Arg Ile Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp
    255                 260                 265

gaa cga aat aga cag atc gct gag ata ggt gcc tca ctg att aag cat   986
Glu Arg Asn Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His
270                 275                 280                 285

tgg taactgtcag accaagttta ctcatatata ctttagattg atttaaaact       1039
Trp

tcatttttaa tttaaaagga tctaggtgaa gatccttttt gataatctca tgaccaaaat 1099

cccttaacgt gagttttcgt tccactgagc gtcagacccc gtagaaaaga tcaaaggatc 1159

ttcttgagat cctttttttc tgcgcgtaat ctgctgcttg caaacaaaaa aaccaccgct 1219

accagcggtg gtttgtttgc cggatcaaga gctaccaact ctttttccga aggtaactgg 1279

cttcagcaga gcgcagatac caaatactgt ccttctagtg tagccgtagt taggccacca 1339

cttcaagaac tctgtagcac cgcctacata cctcgctctg ctaatcctgt taccagtggc 1399
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tgctgccagt ggcgataagt cgtgtcttac cgggttggac tcaagacgat agttaccgga 1459

taaggcgcag cggtcgggct gaacgggggg ttcgtgcaca cagcccagct tggagcgaac 1519

gacctacacc gaactgagat acctacagcg tgagctatga gaaagcgcca cgcttcccga 1579

agggagaaag gcggacaggt atccggtaag cggcagggtc ggaacaggag agcgcacgag 1639

ggagcttcca gggggaaacg cctggtatct ttatagtcct gtcgggtttc gccacctctg 1699

acttgagcgt cgatttttgt gatgctcgtc aggggggcgg agcctatgga aaaacgccag 1759

caacgcggcc tttttacggt tcctggcctt ttgctggcct tttgctcaca tgtaagcttc 1819

ccccccccct taattaaccc ccccccctgt acacccccccc cccgctagcc ccccccccca 1879

gatctccccc cccccgacgt ccccccctcta gacccccccc ccgcatgccc ccccccccga 1939

attcacgt 1947

<210> 265
<211> 286
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector

<400> 265

Met	Ser	Ile	Gln	His	Phe	Arg	Val	Ala	Leu	Ile	Pro	Phe	Phe	Ala	Ala
1				5				10						15	
Phe	Cys	Leu	Pro	Val	Phe	Ala	His	Pro	Glu	Thr	Leu	Val	Lys	Val	Lys
			20					25					30		
Asp	Ala	Glu	Asp	Gln	Leu	Gly	Ala	Arg	Val	Gly	Tyr	Ile	Glu	Leu	Asp
		35					40					45			
Leu	Asn	Ser	Gly	Lys	Ile	Leu	Glu	Ser	Phe	Arg	Pro	Glu	Glu	Arg	Phe
	50					55					60				
Pro	Met	Met	Ser	Thr	Phe	Lys	Val	Leu	Leu	Cys	Gly	Ala	Val	Leu	Ser
65					70					75					80
Arg	Ile	Asp	Ala	Gly	Gln	Glu	Gln	Leu	Gly	Arg	Arg	Ile	His	Tyr	Ser
			85					90					95		
Gln	Asn	Asp	Leu	Val	Glu	Tyr	Ser	Pro	Val	Thr	Glu	Lys	His	Leu	Thr
		100					105					110			
Asp	Gly	Met	Thr	Val	Arg	Glu	Leu	Cys	Ser	Ala	Ala	Ile	Thr	Met	Ser
	115					120					125				
Asp	Asn	Thr	Ala	Ala	Asn	Leu	Leu	Leu	Thr	Thr	Ile	Gly	Gly	Pro	Lys
130					135					140					

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Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val Thr Arg Leu
145                 150                 155                 160

Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg
                165                 170                 175

Asp Thr Thr Met Pro Val Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
            180                 185                 190

Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp
        195                 200                 205

Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro
    210                 215                 220

Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser
225                 230                 235                 240

Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile
                245                 250                 255

Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp Glu Arg Asn
            260                 265                 270

Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His Trp
        275                 280                 285
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<210> 266
<211> 142
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA cassette

<400> 266
gacgtcttaa tgtgagttag ctcactcatt aggcacccca ggctttacac tttatgcttc 60
cggctcgtat gttgtgtgga attgtgagcg gataacaatt tcacacagga aacagctatg 120
accatgatta cgaatttcta ga 142

<210> 267
<211> 520
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector

<220>
<221> CDS
<222> (1)..(510)

<400> 267
gaa ttc gag cag aag ctg atc tct gag gag gat ctg tag ggt ggt ggc 48
Glu Phe Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu Gly Gly Gly
1 5 10 15

tct ggt tcc ggt gat ttt gat tat gaa aag atg gca aac gct aat aag 96
Ser Gly Ser Gly Asp Phe Asp Tyr Glu Lys Met Ala Asn Ala Asn Lys
20 25 30

ggg gct atg acc gaa aat gcc gat gaa aac gcg cta cag tct gac gct 144
Gly Ala Met Thr Glu Asn Ala Asp Glu Asn Ala Leu Gln Ser Asp Ala
35 40 45

aaa ggc aaa ctt gat tct gtc gct act gat tac ggt gct gct atc gat 192
Lys Gly Lys Leu Asp Ser Val Ala Thr Asp Tyr Gly Ala Ala Ile Asp
50 55 60

ggt ttc att ggt gac gtt tcc ggc ctt gct aat ggt aat ggt gct act 240
Gly Phe Ile Gly Asp Val Ser Gly Leu Ala Asn Gly Asn Gly Ala Thr
65 70 75

ggt gat ttt gct ggc tct aat tcc caa atg gct caa gtc ggt gac ggt 288
Gly Asp Phe Ala Gly Ser Asn Ser Gln Met Ala Gln Val Gly Asp Gly
80 85 90 95

gat aat tca cct tta atg aat aat ttc cgt caa tat tta cct tcc ctc 336
Asp Asn Ser Pro Leu Met Asn Asn Phe Arg Gln Tyr Leu Pro Ser Leu
100 105 110

cct caa tcg gtt gaa tgt cgc cct ttt gtc ttt ggc gct ggt aaa cca 384
Pro Gln Ser Val Glu Cys Arg Pro Phe Val Phe Gly Ala Gly Lys Pro
115 120 125

tat gaa ttt tct att gat tgt gac aaa ata aac tta ttc cgt ggt gtc 432
Tyr Glu Phe Ser Ile Asp Cys Asp Lys Ile Asn Leu Phe Arg Gly Val
130 135 140

ttt gcg ttt ctt tta tat gtt gcc acc ttt atg tat gta ttt tct acg 480
Phe Ala Phe Leu Leu Tyr Val Ala Thr Phe Met Tyr Val Phe Ser Thr
145 150 155

ttt gct aac ata ctg cgt aat aag gag tct tgataagctt 520
Phe Ala Asn Ile Leu Arg Asn Lys Glu Ser
160 165

<210> 268
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector

<400> 268
Glu Phe Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10

<210> 269
<211> 123
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 269
ggggggggggg aagcttgacc tgtgaagtga aaaatggcgc agattgtgcg acatttttttt 60
tgtctgccgt ttaattaaag ggggggggggg gccggcctgg ggggggggtgt acagggggggg 120
ggg 123

<210> 270
<211> 470
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 270
gctagcacgc gccctgtagc ggcgcattaa gcgcggcggg tgtggtggtt acgcgcagcg 60
tgaccgctac acttgccagc gccctagcgc ccgctccttt cgctttcttc ccttcctttc 120
tcgccacgtt cgccggcttt ccccgtcaag ctctaaatcg gggcatccct ttagggttcc 180
gatttagtgc tttacggcac ctcgacccca aaaaacttga ttagggtgat ggttctcgta 240
gtgggccatc gccctgatag acggtttttc gccctttgac gttggagtcc acgttcttta 300
atagtggact cttgttccaa actggaacaa cactcaaccc tatctcggtc tattcttttg 360
atttataagg gattttgccg atttcggcct attggttaaa aaatgagctg atttaacaaa 420
aatttaacgc gaattttaac aaaatattaa cgtttacaat ttcatgtaca 470

<210> 271
<211> 733
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 271
agatctgacc aaaatccctt aacgtgagtt ttcgttccac tgagcgtcag accccgtaga 60
aaagatcaaa ggatcttctt gagatccttt ttttctgcgc gtaatctgct gcttgcaaac 120
aaaaaaacca ccgctaccag cggtggtttg tttgccggat caagagctac caactctttt 180
tccgaaggta actggctaca gcagagcgca gataccaaat actgttcttc tagtgtagcc 240
gtagttaggc caccacttca agaactctgt agcaccgcct acatacctcg ctctgctaat 300
cctgttacca gtggctgctg ccagtggcga taagtcgtgt cttaccgggt tggactcaag 360
acgatagtta ccggataagg cgcagcggtc gggctgaacg gggggttcgt gcacacagcc 420
cagcttggag cgaacgacct acaccgaact gagataccta cagcgtgagc tatgagaaag 480
cgccacgctt cccgaaggga gaaaggcgga caggtatccg gtaagcggca gggtcggaac 540
aggagagcgc acgagggagc ttccaggggg aaacgcctgg tatctttata gtcctgtcgg 600

gtttcgccac ctctgacttg agcgtcgatt tttgtgatgc tcgtcagggg ggcggagcct 660
atggaaaaac gccagcaacg cggccttttt acggttcctg gccttttgct ggccttttgc 720
tcacatggct agc 733

<210> 272
<211> 813
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector

<220>
<221> CDS
<222> (102)..(758)

<400> 272
gggacgtcgg gtgaggttcc aactttcacc ataatgaaat aagatcacta ccgggcgtat 60

ttttttgagtt atcgagattt tcaggagcta aggaagctaa a atg gag aaa aaa atc 116
Met Glu Lys Lys Ile
1 5

act gga tat acc acc gtt gat ata tcc caa tgg cat cgt aaa gaa cat 164
Thr Gly Tyr Thr Thr Val Asp Ile Ser Gln Trp His Arg Lys Glu His
10 15 20

ttt gag gca ttt cag tca gtt gct caa tgt acc tat aac cag acc gtt 212
Phe Glu Ala Phe Gln Ser Val Ala Gln Cys Thr Tyr Asn Gln Thr Val
25 30 35

cag ctg gat att acg gcc ttt tta aag acc gta aag aaa aat aag cac 260
Gln Leu Asp Ile Thr Ala Phe Leu Lys Thr Val Lys Lys Asn Lys His
40 45 50

aag ttt tat ccg gcc ttt att cac att ctt gcc cgc ctg atg aat gct 308
Lys Phe Tyr Pro Ala Phe Ile His Ile Leu Ala Arg Leu Met Asn Ala
55 60 65

cac ccg gag ttc cgt atg gca atg aaa gac ggt gag ctg gtg ata tgg 356
His Pro Glu Phe Arg Met Ala Met Lys Asp Gly Glu Leu Val Ile Trp
70 75 80 85

gat agt gtt cac cct tgt tac acc gtt ttc cat gag caa act gaa acg 404
Asp Ser Val His Pro Cys Tyr Thr Val Phe His Glu Gln Thr Glu Thr
90 95 100

ttt tca tcg ctc tgg agt gaa tac cac gac gat ttc cgg cag ttt cta 452
Phe Ser Ser Leu Trp Ser Glu Tyr His Asp Asp Phe Arg Gln Phe Leu
105 110 115

cac ata tat tcg caa gat gtg gcg tgt tac ggt gaa aac ctg gcc tat 500
His Ile Tyr Ser Gln Asp Val Ala Cys Tyr Gly Glu Asn Leu Ala Tyr
120 125 130

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ttc cct aaa ggg ttt att gag aat atg ttt ttc gtc tca gcc aat ccc   548
Phe Pro Lys Gly Phe Ile Glu Asn Met Phe Phe Val Ser Ala Asn Pro
    135                 140                 145

tgg gtg agt ttc acc agt ttt gat tta aac gta gcc aat atg gac aac   596
Trp Val Ser Phe Thr Ser Phe Asp Leu Asn Val Ala Asn Met Asp Asn
150                 155                 160                 165

ttc ttc gcc ccc gtt ttc act atg ggc aaa tat tat acg caa ggc gac   644
Phe Phe Ala Pro Val Phe Thr Met Gly Lys Tyr Tyr Thr Gln Gly Asp
                170                 175                 180

aag gtg ctg atg ccg ctg gcg att cag gtt cat cat gcc gtt tgt gat   692
Lys Val Leu Met Pro Leu Ala Ile Gln Val His His Ala Val Cys Asp
            185                 190                 195

ggc ttc cat gtc ggc aga atg ctt aat gaa tta caa cag tac tgc gat   740
Gly Phe His Val Gly Arg Met Leu Asn Glu Leu Gln Gln Tyr Cys Asp
        200                 205                 210

gag tgg cag ggc ggg gcg taatttttt aaggcagtta ttgggtgccc           788
Glu Trp Gln Gly Gly Ala
    215

ttaaacgcct ggtgctagat cttcc                                      813
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<210> 273
<211> 219
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector

<400> 273

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Met Glu Lys Lys Ile Thr Gly Tyr Thr Thr Val Asp Ile Ser Gln Trp
  1               5                  10                  15

His Arg Lys Glu His Phe Glu Ala Phe Gln Ser Val Ala Gln Cys Thr
            20                  25                  30

Tyr Asn Gln Thr Val Gln Leu Asp Ile Thr Ala Phe Leu Lys Thr Val
        35                  40                  45

Lys Lys Asn Lys His Lys Phe Tyr Pro Ala Phe Ile His Ile Leu Ala
    50                  55                  60

Arg Leu Met Asn Ala His Pro Glu Phe Arg Met Ala Met Lys Asp Gly
65                  70                  75                  80

Glu Leu Val Ile Trp Asp Ser Val His Pro Cys Tyr Thr Val Phe His
                85                  90                  95

Glu Gln Thr Glu Thr Phe Ser Ser Leu Trp Ser Glu Tyr His Asp Asp
            100                 105                 110
```

```
Phe Arg Gln Phe Leu His Ile Tyr Ser Gln Asp Val Ala Cys Tyr Gly
        115                 120                 125

Glu Asn Leu Ala Tyr Phe Pro Lys Gly Phe Ile Glu Asn Met Phe Phe
    130                 135                 140

Val Ser Ala Asn Pro Trp Val Ser Phe Thr Ser Phe Asp Leu Asn Val
145                 150                 155                 160

Ala Asn Met Asp Asn Phe Phe Ala Pro Val Phe Thr Met Gly Lys Tyr
                165                 170                 175

Tyr Thr Gln Gly Asp Lys Val Leu Met Pro Leu Ala Ile Gln Val His
            180                 185                 190

His Ala Val Cys Asp Gly Phe His Val Gly Arg Met Leu Asn Glu Leu
        195                 200                 205

Gln Gln Tyr Cys Asp Glu Trp Gln Gly Gly Ala
    210                 215
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<210> 274
<211> 2755
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector

<220>
<221> CDS
<222> (3)..(509)

<400> 274

```
aa ttc gag cag aag ctg atc tct gag gag gat ctg tag ggt ggt ggc    47
   Phe Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu     Gly Gly Gly
     1               5                  10

tct ggt tcc ggt gat ttt gat tat gaa aag atg gca aac gct aat aag    95
Ser Gly Ser Gly Asp Phe Asp Tyr Glu Lys Met Ala Asn Ala Asn Lys
 15                  20                  25                  30

ggg gct atg acc gaa aat gcc gat gaa aac gcg cta cag tct gac gct   143
Gly Ala Met Thr Glu Asn Ala Asp Glu Asn Ala Leu Gln Ser Asp Ala
                35                  40                  45

aaa ggc aaa ctt gat tct gtc gct act gat tac ggt gct gct atc gat   191
Lys Gly Lys Leu Asp Ser Val Ala Thr Asp Tyr Gly Ala Ala Ile Asp
            50                  55                  60

ggt ttc att ggt gac gtt tcc ggc ctt gct aat ggt aat ggt gct act   239
Gly Phe Ile Gly Asp Val Ser Gly Leu Ala Asn Gly Asn Gly Ala Thr
        65                  70                  75
```

```
ggt gat ttt gct ggc tct aat tcc caa atg gct caa gtc ggt gac ggt   287
Gly Asp Phe Ala Gly Ser Asn Ser Gln Met Ala Gln Val Gly Asp Gly
     80                  85                  90

gat aat tca cct tta atg aat aat ttc cgt caa tat tta cct tcc ctc   335
Asp Asn Ser Pro Leu Met Asn Asn Phe Arg Gln Tyr Leu Pro Ser Leu
 95                 100                 105                 110

cct caa tcg gtt gaa tgt cgc cct ttt gtc ttt ggc gct ggt aaa cca   383
Pro Gln Ser Val Glu Cys Arg Pro Phe Val Phe Gly Ala Gly Lys Pro
                115                 120                 125

tat gaa ttt tct att gat tgt gac aaa ata aac tta ttc cgt ggt gtc   431
Tyr Glu Phe Ser Ile Asp Cys Asp Lys Ile Asn Leu Phe Arg Gly Val
            130                 135                 140

ttt gcg ttt ctt tta tat gtt gcc acc ttt atg tat gta ttt tct acg   479
Phe Ala Phe Leu Leu Tyr Val Ala Thr Phe Met Tyr Val Phe Ser Thr
        145                 150                 155

ttt gct aac ata ctg cgt aat aag gag tct tgataagctt gacctgtgaa     529
Phe Ala Asn Ile Leu Arg Asn Lys Glu Ser
    160                 165

gtgaaaaatg gcgcagattg tgcgacattt tttttgtctg ccgtttaatt aaaggggggg 589

gggggccggc ctgggggggg gtgtacatga aattgtaaac gttaatattt tgttaaaatt 649

cgcgttaaat ttttgttaaa tcagctcatt ttttaaccaa taggccgaaa tcggcaaaat 709

cccttataaa tcaaaagaat agaccgagat agggttgagt gttgttccag tttggaacaa 769

gagtccacta ttaaagaacg tggactccaa cgtcaaaggg cgaaaaaccg tctatcaggg 829

cgatggccca ctacgagaac catcacccta atcaagtttt ttggggtcga ggtgccgtaa 889

agcactaaat cggaacccta aagggagccc ccgatttaga gcttgacggg gaaagccggc 949

gaacgtggcg agaaaggaag ggaagaaagc gaaaggagcg ggcgctaggg cgctggcaag 1009

tgtagcggtc acgctgcgcg taaccaccac acccgccgcg cttaatgcgc cgctacaggg 1069

cgcgtgctag ccatgtgagc aaaaggccag caaaaggcca ggaaccgtaa aaaggccgcg 1129

ttgctggcgt ttttccatag gctccgcccc cctgacgagc atcacaaaaa tcgacgctca 1189

agtcagaggt ggcgaaaccc gacaggacta taaagatacc aggcgtttcc ccctggaagc 1249

tccctcgtgc gctctcctgt tccgaccctg ccgcttaccg gatacctgtc cgcctttctc 1309

ccttcgggaa gcgtggcgct ttctcatagc tcacgctgta ggtatctcag ttcggtgtag 1369

gtcgttcgct ccaagctggg ctgtgtgcac gaacccccgc ttcagcccga ccgctgcgcc 1429

ttatccggta actatcgtct tgagtccaac ccggtaagac acgacttatc gccactggca 1489

gcagccactg gtaacaggat tagcagagcg aggtatgtag gcggtgctac agagttcttg 1549
```

aagtggtggc ctaactacgg ctacactaga agaacagtat ttggtatctg cgctctgctg 1609

tagccagtta ccttcggaaa aagagttggt agctcttgat ccggcaaaca aaccaccgct 1669

ggtagcggtg gtttttttgt ttgcaagcag cagattacgc gcagaaaaaa aggatctcaa 1729

gaagatcctt tgatcttttc tacggggtct gacgctcagt ggaacgaaaa ctcacgttaa 1789

gggattttgg tcagatctag caccaggcgt ttaagggcac caataactgc cttaaaaaaa 1849

ttacgccccg ccctgccact catcgcagta ctgttgtaat tcattaagca ttctgccgac 1909

atggaagcca tcacaaacgg catgatgaac ctgaatcgcc agcggcatca gcaccttgtc 1969

gccttgcgta taatatttgc ccatagtgaa aacgggggcg aagaagttgt ccatattggc 2029

tacgtttaaa tcaaaactgg tgaaactcac ccagggattg gctgagacga aaaacatatt 2089

ctcaataaac cctttaggga ataggccag gttttcaccg taacacgcca catcttgcga 2149

atatatgtgt agaaactgcc ggaaatcgtc gtggtattca ctccagagcg atgaaaacgt 2209

ttcagtttgc tcatggaaaa cggtgtaaca agggtgaaca ctatcccata tcaccagctc 2269

accgtctttc attgccatac ggaactccgg gtgagcattc atcaggcggg caagaatgtg 2329

aataaaggcc ggataaaact tgtgcttatt tttctttacg gtctttaaaa aggccgtaat 2389

atccagctga acggtctggt tataggtaca ttgagcaact gactgaaatg cctcaaaatg 2449

ttctttacga tgccattggg atatatcaac ggtggtatat ccagtgattt ttttctccat 2509

tttagcttcc ttagctcctg aaaatctcga taactcaaaa aatacgcccg gtagtgatct 2569

tatttcatta tggtgaaagt tggaacctca cccgacgtct aatgtgagtt agctcactca 2629

ttaggcaccc caggctttac actttatgct tccggctcgt atgttgtgtg gaattgtgag 2689

cggataacaa tttcacacag gaaacagcta tgaccatgat tacgaatttc tagagcatgc 2749

gggggg 2755

<210> 275
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector

<400> 275
Phe Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10

<210> 276
<211> 219
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 276
Met Glu Lys Lys Ile Thr Gly Tyr Thr Thr Val Asp Ile Ser Gln Trp
1 5 10 15

His Arg Lys Glu His Phe Glu Ala Phe Gln Ser Val Ala Gln Cys Thr
20 25 30

Tyr Asn Gln Thr Val Gln Leu Asp Ile Thr Ala Phe Leu Lys Thr Val
35 40 45

Lys Lys Asn Lys His Lys Phe Tyr Pro Ala Phe Ile His Ile Leu Ala
50 55 60

Arg Leu Met Asn Ala His Pro Glu Phe Arg Met Ala Met Lys Asp Gly
65 70 75 80

Glu Leu Val Ile Trp Asp Ser Val His Pro Cys Tyr Thr Val Phe His
85 90 95

Glu Gln Thr Glu Thr Phe Ser Ser Leu Trp Ser Glu Tyr His Asp Asp
100 105 110

Phe Arg Gln Phe Leu His Ile Tyr Ser Gln Asp Val Ala Cys Tyr Gly
115 120 125

Glu Asn Leu Ala Tyr Phe Pro Lys Gly Phe Ile Glu Asn Met Phe Phe
130 135 140

Val Ser Ala Asn Pro Trp Val Ser Phe Thr Ser Phe Asp Leu Asn Val
145 150 155 160

Ala Asn Met Asp Asn Phe Phe Ala Pro Val Phe Thr Met Gly Lys Tyr
165 170 175

Tyr Thr Gln Gly Asp Lys Val Leu Met Pro Leu Ala Ile Gln Val His
180 185 190

His Ala Val Cys Asp Gly Phe His Val Gly Arg Met Leu Asn Glu Leu
195 200 205

Gln Gln Tyr Cys Asp Glu Trp Gln Gly Gly Ala
210 215

<210> 277
<211> 173
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA cassette

<400> 277
gacgtcttaa tgtgagttag ctcactcatt aggcacccca ggctttacac tttatgcttc 60
cggctcgtat gttgtgtgga attgtgagcg gataacaatt tcacacagga aacagctatg 120
accatgtcta gaataacttc gtataatgta cgctatacga agttatcgca tgc 173

<210> 278
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA cassette

<400> 278
agatctcata acttcgtata atgtatgcta tacgaagtta tgacgtc 47

<210> 279
<211> 1255
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<220>
<221> CDS
<222> (1)..(1245)

<400> 279
gaa ttc ggt ggt ggt gga tct gcg tgc gct gaa acg gtt gaa agt tgt 48
Glu Phe Gly Gly Gly Gly Ser Ala Cys Ala Glu Thr Val Glu Ser Cys
1 5 10 15

tta gca aaa tcc cat aca gaa aat tca ttt act aac gtc tgg aaa gac 96
Leu Ala Lys Ser His Thr Glu Asn Ser Phe Thr Asn Val Trp Lys Asp
20 25 30

gac aaa act tta gat cgt tac gct aac tat gag ggc tgt ctg tgg aat 144
Asp Lys Thr Leu Asp Arg Tyr Ala Asn Tyr Glu Gly Cys Leu Trp Asn
35 40 45

gct aca ggc gtt gta gtt tgt act ggt gac gaa act cag tgt tac ggt 192
Ala Thr Gly Val Val Val Cys Thr Gly Asp Glu Thr Gln Cys Tyr Gly
50 55 60

aca tgg gtt cct att ggg ctt gct atc cct gaa aat gag ggt ggt ggc 240
Thr Trp Val Pro Ile Gly Leu Ala Ile Pro Glu Asn Glu Gly Gly Gly
65 70 75 80

```
tct gag ggt ggc ggt tct gag ggt ggc ggt tct gag ggt ggc ggt act   288
Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Thr
                85                  90                  95

aaa cct cct gag tac ggt gat aca cct att ccg ggc tat act tat atc   336
Lys Pro Pro Glu Tyr Gly Asp Thr Pro Ile Pro Gly Tyr Thr Tyr Ile
            100                 105                 110

aac cct ctc gac ggc act tat ccg cct ggt act gag caa aac ccc gct   384
Asn Pro Leu Asp Gly Thr Tyr Pro Pro Gly Thr Glu Gln Asn Pro Ala
        115                 120                 125

aat cct aat cct tct ctt gag gag tct cag cct ctt aat act ttc atg   432
Asn Pro Asn Pro Ser Leu Glu Glu Ser Gln Pro Leu Asn Thr Phe Met
    130                 135                 140

ttt cag aat aat agg ttc cga aat agg cag ggg gca tta act gtt tat   480
Phe Gln Asn Asn Arg Phe Arg Asn Arg Gln Gly Ala Leu Thr Val Tyr
145                 150                 155                 160

acg ggc act gtt act caa ggc act gac ccc gtt aaa act tat tac cag   528
Thr Gly Thr Val Thr Gln Gly Thr Asp Pro Val Lys Thr Tyr Tyr Gln
                165                 170                 175

tac act cct gta tca tca aaa gcc atg tat gac gct tac tgg aac ggt   576
Tyr Thr Pro Val Ser Ser Lys Ala Met Tyr Asp Ala Tyr Trp Asn Gly
            180                 185                 190

aaa ttc aga gac tgc gct ttc cat tct ggc ttt aat gag gat tta ttt   624
Lys Phe Arg Asp Cys Ala Phe His Ser Gly Phe Asn Glu Asp Leu Phe
        195                 200                 205

gtt tgt gaa tat caa ggc caa tcg tct gac ctg cct caa cct cct gtc   672
Val Cys Glu Tyr Gln Gly Gln Ser Ser Asp Leu Pro Gln Pro Pro Val
    210                 215                 220

aat gct ggc ggc ggc tct ggt ggt ggt tct ggt ggc ggc tct gag ggt   720
Asn Ala Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser Glu Gly
225                 230                 235                 240

ggt ggc tct gag ggt ggc ggt tct gag ggt ggc ggc tct gag gga ggc   768
Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly
                245                 250                 255

ggt tcc ggt ggt ggc tct ggt tcc ggt gat ttt gat tat gaa aag atg   816
Gly Ser Gly Gly Gly Ser Gly Ser Gly Asp Phe Asp Tyr Glu Lys Met
            260                 265                 270

gca aac gct aat aag ggg gct atg acc gaa aat gcc gat gaa aac gcg   864
Ala Asn Ala Asn Lys Gly Ala Met Thr Glu Asn Ala Asp Glu Asn Ala
        275                 280                 285

cta cag tct gac gct aaa ggc aaa ctt gat tct gtc gct act gat tac   912
Leu Gln Ser Asp Ala Lys Gly Lys Leu Asp Ser Val Ala Thr Asp Tyr
    290                 295                 300
```

```
ggt gct gct atc gat ggt ttc att ggt gac gtt tcc ggc ctt gct aat   960
Gly Ala Ala Ile Asp Gly Phe Ile Gly Asp Val Ser Gly Leu Ala Asn
305                 310                 315                 320

ggt aat ggt gct act ggt gat ttt gct ggc tct aat tcc caa atg gct   1008
Gly Asn Gly Ala Thr Gly Asp Phe Ala Gly Ser Asn Ser Gln Met Ala
                325                 330                 335

caa gtc ggt gaa ggt gat aat tca cct tta atg aat aat ttc cgt caa   1056
Gln Val Gly Glu Gly Asp Asn Ser Pro Leu Met Asn Asn Phe Arg Gln
            340                 345                 350

tat tta cct tcc atc cct caa tcg gtt gaa tgt cgc cct ttt gtc ttt   1104
Tyr Leu Pro Ser Ile Pro Gln Ser Val Glu Cys Arg Pro Phe Val Phe
        355                 360                 365

ggc gct ggt aaa ccc tat gaa ttt tct att gat tgt gac aaa ata aac   1152
Gly Ala Gly Lys Pro Tyr Glu Phe Ser Ile Asp Cys Asp Lys Ile Asn
    370                 375                 380

tta ttc cgt ggt gtc ttt gcg ttt ctt tta tat gtt gcc acc ttt atg   1200
Leu Phe Arg Gly Val Phe Ala Phe Leu Leu Tyr Val Ala Thr Phe Met
385                 390                 395                 400

tat gta ttt tct acg ttt gct aac ata ctg cgt aat aag gag tct       1245
Tyr Val Phe Ser Thr Phe Ala Asn Ile Leu Arg Asn Lys Glu Ser
                405                 410                 415

tgataagctt                                                       1255
```

<210> 280
<211> 415
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 280

```
Glu Phe Gly Gly Gly Gly Ser Ala Cys Ala Glu Thr Val Glu Ser Cys
  1               5                  10                  15

Leu Ala Lys Ser His Thr Glu Asn Ser Phe Thr Asn Val Trp Lys Asp
            20                  25                  30

Asp Lys Thr Leu Asp Arg Tyr Ala Asn Tyr Glu Gly Cys Leu Trp Asn
        35                  40                  45

Ala Thr Gly Val Val Val Cys Thr Gly Asp Glu Thr Gln Cys Tyr Gly
    50                  55                  60

Thr Trp Val Pro Ile Gly Leu Ala Ile Pro Glu Asn Glu Gly Gly Gly
65                  70                  75                  80

Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Thr
                85                  90                  95
```

Lys Pro Pro Glu Tyr Gly Asp Thr Pro Ile Pro Gly Tyr Thr Tyr Ile
100 105 110

Asn Pro Leu Asp Gly Thr Tyr Pro Pro Gly Thr Glu Gln Asn Pro Ala
115 120 125

Asn Pro Asn Pro Ser Leu Glu Glu Ser Gln Pro Leu Asn Thr Phe Met
130 135 140

Phe Gln Asn Asn Arg Phe Arg Asn Arg Gln Gly Ala Leu Thr Val Tyr
145 150 155 160

Thr Gly Thr Val Thr Gln Gly Thr Asp Pro Val Lys Thr Tyr Tyr Gln
165 170 175

Tyr Thr Pro Val Ser Ser Lys Ala Met Tyr Asp Ala Tyr Trp Asn Gly
180 185 190

Lys Phe Arg Asp Cys Ala Phe His Ser Gly Phe Asn Glu Asp Leu Phe
195 200 205

Val Cys Glu Tyr Gln Gly Gln Ser Ser Asp Leu Pro Gln Pro Pro Val
210 215 220

Asn Ala Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser Glu Gly
225 230 235 240

Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly Gly Ser Glu Gly Gly
245 250 255

Gly Ser Gly Gly Gly Ser Gly Ser Gly Asp Phe Asp Tyr Glu Lys Met
260 265 270

Ala Asn Ala Asn Lys Gly Ala Met Thr Glu Asn Ala Asp Glu Asn Ala
275 280 285

Leu Gln Ser Asp Ala Lys Gly Lys Leu Asp Ser Val Ala Thr Asp Tyr
290 295 300

Gly Ala Ala Ile Asp Gly Phe Ile Gly Asp Val Ser Gly Leu Ala Asn
305 310 315 320

Gly Asn Gly Ala Thr Gly Asp Phe Ala Gly Ser Asn Ser Gln Met Ala
325 330 335

Gln Val Gly Glu Gly Asp Asn Ser Pro Leu Met Asn Asn Phe Arg Gln
340 345 350

Tyr Leu Pro Ser Ile Pro Gln Ser Val Glu Cys Arg Pro Phe Val Phe
355 360 365

Gly Ala Gly Lys Pro Tyr Glu Phe Ser Ile Asp Cys Asp Lys Ile Asn
370 375 380

Leu Phe Arg Gly Val Phe Ala Phe Leu Leu Tyr Val Ala Thr Phe Met
385 390 395 400

Tyr Val Phe Ser Thr Phe Ala Asn Ile Leu Arg Asn Lys Glu Ser
405 410 415

<210> 281
<211> 502
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<220>
<221> CDS
<222> (4)..(492)

<400> 281
cgg gaa ttc gga ggc ggt tcc ggt ggt ggc tct ggt tcc ggt gat ttt 48
Glu Phe Gly Gly Gly Ser Gly Gly Gly Ser Gly Ser Gly Asp Phe
1 5 10 15

gat tat gaa aag atg gca aac gct aat aag ggg gct atg acc gaa aat 96
Asp Tyr Glu Lys Met Ala Asn Ala Asn Lys Gly Ala Met Thr Glu Asn
20 25 30

gcc gat gaa aac gcg cta cag tct gac gct aaa ggc aaa ctt gat tct 144
Ala Asp Glu Asn Ala Leu Gln Ser Asp Ala Lys Gly Lys Leu Asp Ser
35 40 45

gtc gct act gat tac ggt gct gct atc gat ggt ttc att ggt gac gtt 192
Val Ala Thr Asp Tyr Gly Ala Ala Ile Asp Gly Phe Ile Gly Asp Val
50 55 60

tcc ggc ctt gct aat ggt aat ggt gct act ggt gat ttt gct ggc tct 240
Ser Gly Leu Ala Asn Gly Asn Gly Ala Thr Gly Asp Phe Ala Gly Ser
65 70 75

aat tcc caa atg gct caa gtc ggt gac ggt gat aat tca cct tta atg 288
Asn Ser Gln Met Ala Gln Val Gly Asp Gly Asp Asn Ser Pro Leu Met
80 85 90 95

aat aat ttc cgt caa tat tta cct tcc ctc cct caa tcg gtt gaa tgt 336
Asn Asn Phe Arg Gln Tyr Leu Pro Ser Leu Pro Gln Ser Val Glu Cys
100 105 110

cgc cct ttt gtc ttt ggc gct ggt aaa cca tat gaa ttt tct att gat 384
Arg Pro Phe Val Phe Gly Ala Gly Lys Pro Tyr Glu Phe Ser Ile Asp
115 120 125

tgt gac aaa ata aac tta ttc cgt ggt gtc ttt gcg ttt ctt tta tat 432
Cys Asp Lys Ile Asn Leu Phe Arg Gly Val Phe Ala Phe Leu Leu Tyr
130 135 140

gtt gcc acc ttt atg tat gta ttt tct acg ttt gct aac ata ctg cgt 480
Val Ala Thr Phe Met Tyr Val Phe Ser Thr Phe Ala Asn Ile Leu Arg
145 150 155

aat aag gag tct tgataagctt 502
Asn Lys Glu Ser
160

<210> 282
<211> 163
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 282
Glu Phe Gly Gly Gly Ser Gly Gly Gly Ser Gly Ser Gly Asp Phe Asp
1 5 10 15

Tyr Glu Lys Met Ala Asn Ala Asn Lys Gly Ala Met Thr Glu Asn Ala
20 25 30

Asp Glu Asn Ala Leu Gln Ser Asp Ala Lys Gly Lys Leu Asp Ser Val
35 40 45

Ala Thr Asp Tyr Gly Ala Ala Ile Asp Gly Phe Ile Gly Asp Val Ser
50 55 60

Gly Leu Ala Asn Gly Asn Gly Ala Thr Gly Asp Phe Ala Gly Ser Asn
65 70 75 80

Ser Gln Met Ala Gln Val Gly Asp Gly Asp Asn Ser Pro Leu Met Asn
85 90 95

Asn Phe Arg Gln Tyr Leu Pro Ser Leu Pro Gln Ser Val Glu Cys Arg
100 105 110

Pro Phe Val Phe Gly Ala Gly Lys Pro Tyr Glu Phe Ser Ile Asp Cys
115 120 125

Asp Lys Ile Asn Leu Phe Arg Gly Val Phe Ala Phe Leu Leu Tyr Val
130 135 140

Ala Thr Phe Met Tyr Val Phe Ser Thr Phe Ala Asn Ile Leu Arg Asn
145 150 155 160

Lys Glu Ser

<210> 283
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA cassette

<400> 283
gcatgccata acttcgtata atgtacgcta tacgaagtta taagctt 47

<210> 284
<211> 1163
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic gene cassette

<220>
<221> CDS
<222> (82)..(978)

<400> 284
gggggtgtac attcaaatat gtatccgctc atgagacaat aaccctgata aatgcttcaa 60

taatattgaa aaaggaagag t atg agt att caa cat ttc cgt gtc gcc ctt 111
Met Ser Ile Gln His Phe Arg Val Ala Leu
1 5 10

att ccc ttt ttt gcg gca ttt tgc ctt cct gtt ttt gct cac cca gaa 159
Ile Pro Phe Phe Ala Ala Phe Cys Leu Pro Val Phe Ala His Pro Glu
15 20 25

acg ctg gtg aaa gta aaa gat gct gag gat cag ttg ggt gcg cga gtg 207
Thr Leu Val Lys Val Lys Asp Ala Glu Asp Gln Leu Gly Ala Arg Val
30 35 40

ggt tac atc gaa ctg gat ctc aac agc ggt aag atc ctt gag agt ttt 255
Gly Tyr Ile Glu Leu Asp Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe
45 50 55

cgc ccc gaa gaa cgt ttt cca atg atg agc act ttt aaa gtt ctg cta 303
Arg Pro Glu Glu Arg Phe Pro Met Met Ser Thr Phe Lys Val Leu Leu
60 65 70

tgt ggc gcg gta tta tcc cgt att gac gcc ggg caa gag caa ctc ggt 351
Cys Gly Ala Val Leu Ser Arg Ile Asp Ala Gly Gln Glu Gln Leu Gly
75 80 85 90

cgc cgc ata cac tat tct cag aat gac ttg gtt gag tac tca cca gtc 399
Arg Arg Ile His Tyr Ser Gln Asn Asp Leu Val Glu Tyr Ser Pro Val
95 100 105

aca gaa aag cat ctt acg gat ggc atg aca gta aga gaa tta tgc agt 447
Thr Glu Lys His Leu Thr Asp Gly Met Thr Val Arg Glu Leu Cys Ser
110 115 120

```
gct gcc ata acc atg agt gat aac act gcg gcc aac tta ctt ctg aca   495
Ala Ala Ile Thr Met Ser Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr
        125                 130                 135

acg atc gga gga ccg aag gag cta acc gct ttt ttg cac aac atg ggg   543
Thr Ile Gly Gly Pro Lys Glu Leu Thr Ala Phe Leu His Asn Met Gly
    140                 145                 150

gat cat gta act cgc ctt gat cgt tgg gaa ccg gag ctg aat gaa gcc   591
Asp His Val Thr Arg Leu Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala
155                 160                 165                 170

ata cca aac gac gag cgt gac acc acg atg cct gta gca atg gca aca   639
Ile Pro Asn Asp Glu Arg Asp Thr Thr Met Pro Val Ala Met Ala Thr
                175                 180                 185

acg ttg cgc aaa cta tta act ggc gaa cta ctt act cta gct tcc cgg   687
Thr Leu Arg Lys Leu Leu Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg
            190                 195                 200

caa cag tta ata gac tgg atg gag gcg gat aaa gtt gca gga cca ctt   735
Gln Gln Leu Ile Asp Trp Met Glu Ala Asp Lys Val Ala Gly Pro Leu
        205                 210                 215

ctg cgc tcg gcc ctt ccg gct ggc tgg ttt att gct gat aaa tct gga   783
Leu Arg Ser Ala Leu Pro Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly
    220                 225                 230

gcc ggt gag cgt ggg tct cgc ggt atc att gca gca ctg ggg cca gat   831
Ala Gly Glu Arg Gly Ser Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp
235                 240                 245                 250

ggt aag ccc tcc cgt atc gta gtt atc tac acg acg ggg agt cag gca   879
Gly Lys Pro Ser Arg Ile Val Val Ile Tyr Thr Thr Gly Ser Gln Ala
                255                 260                 265

act atg gat gaa cga aat aga cag atc gct gag ata ggt gcc tca ctg   927
Thr Met Asp Glu Arg Asn Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu
            270                 275                 280

att aag cat tgg gta act gtc aga cca agt tta ctc ata tat act tta   975
Ile Lys His Trp Val Thr Val Arg Pro Ser Leu Leu Ile Tyr Thr Leu
        285                 290                 295

gat tgatttaaaa cttcattttt aatttaaaag gatctaggtg aagatccttt        1028
Asp

ttgataatct catgaccaaa atcccttaac gtgagttttc gttccactga gcgtcagacc 1088

ccgtagaaaa gatcaaagga tcttcttgag atccttttttg ataatggccg gccccccccc 1148

ttaattaagg ggggg                                                  1163
```

<210> 285
<211> 299
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic gene cassette

<400> 285

```
Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
 1               5                  10                  15

Phe Cys Leu Pro Val Phe Ala His Pro Glu Thr Leu Val Lys Val Lys
            20                  25                  30

Asp Ala Glu Asp Gln Leu Gly Ala Arg Val Gly Tyr Ile Glu Leu Asp
        35                  40                  45

Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe Arg Pro Glu Glu Arg Phe
    50                  55                  60

Pro Met Met Ser Thr Phe Lys Val Leu Leu Cys Gly Ala Val Leu Ser
65                  70                  75                  80

Arg Ile Asp Ala Gly Gln Glu Gln Leu Gly Arg Arg Ile His Tyr Ser
                85                  90                  95

Gln Asn Asp Leu Val Glu Tyr Ser Pro Val Thr Glu Lys His Leu Thr
            100                 105                 110

Asp Gly Met Thr Val Arg Glu Leu Cys Ser Ala Ala Ile Thr Met Ser
        115                 120                 125

Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr Thr Ile Gly Gly Pro Lys
    130                 135                 140

Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val Thr Arg Leu
145                 150                 155                 160

Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg
                165                 170                 175

Asp Thr Thr Met Pro Val Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
            180                 185                 190

Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp
        195                 200                 205

Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro
    210                 215                 220

Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser
225                 230                 235                 240

Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile
                245                 250                 255

Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp Glu Arg Asn
            260                 265                 270
```

Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His Trp Val Thr
275 280 285

Val Arg Pro Ser Leu Leu Ile Tyr Thr Leu Asp
290 295

<210> 286
<211> 470
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA cassette

<400> 286
gctagcacgc gccctgtagc ggcgcattaa gcgcggcggg tgtggtggtt acgcgcagcg 60
tgaccgctac acttgccagc gccctagcgc ccgctccttt cgctttcttc ccttcctttc 120
tcgccacgtt cgccggcttt ccccgtcaag ctctaaatcg ggggctccct ttagggttcc 180
gatttagtgc tttacggcac ctcgacccca aaaaacttga ttagggtgat ggttctcgta 240
gtgggccatc gccctgatag acggtttttc gccctttgac gttggagtcc acgttcttta 300
atagtggact cttgttccaa actggaacaa cactcaaccc tatctcggtc tattcttttg 360
atttataagg gattttgccg atttcggcct attggttaaa aaatgagctg atttaacaaa 420
aatttaacgc gaattttaac aaaatattaa cgtttacaat ttcatgtaca 470

<210> 287
<211> 832
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA cassette

<400> 287
agatctaata agatgatctt cttgagatcg ttttggtctg cgcgtaatct cttgctctga 60
aaacgaaaaa accgccttgc agggcggttt ttcgtaggtt ctctgagcta ccaactcttt 120
gaaccgaggt aactggcttg gaggagcgca gtcactaaaa cttgtccttt cagtttagcc 180
ttaaccggcg catgacttca agactaactc ctctaaatca attaccagtg gctgctgcca 240
gtggtgcttt tgcatgtctt tccgggttgg actcaagacg atagttaccg gataaggcgc 300
agcggtcgga ctgaacgggg ggttcgtgca tacagtccag cttggagcga actgcctacc 360
cggaactgag tgtcaggcgt ggaatgagac aaacgcggcc ataacagcgg aatgacaccg 420
gtaaaccgaa aggcaggaac aggagagcgc aggagggagc cgccaggggg aaacgcctgg 480
tatctttata gtcctgtcgg gtttcgccac cactgatttg agcgtcagat ttcgtgatgc 540
ttgtcagggg ggcggagcct atggaaaaac ggctttgccg cggccctctc acttccctgt 600
taagtatctt cctggcatct tccaggaaat ctccgccccg ttcgtaagcc atttccgctc 660
gccgcagtcg aacgaccgag cgtagcgagt cagtgagcga ggaagcggaa tatatcctgt 720
atcacatatt ctgctgacgc accggtgcag cctttttttct cctgccacat gaagcacttc 780
actgacaccc tcatcagtgc caacatagta agccagtata cactccgcta gc 832

<210> 288
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 288
agatctcata acttcgtata atgtatgcta tacgaagtta ttcagatct 49

<210> 289
<211> 96
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 289
tctagagcat gcgtaggaga aaataaaatg aaacaaagca ctattgcact ggcactctta 60
ccgttgctct tcacccctgt taccaaagcc gaattc 96

<210> 290
<211> 120
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 290
tctagagcat gcgtaggaga aaataaaatg aaacaaagca ctattgcact ggcactctta 60
ccgttgctct tcacccctgt taccaaagcc gactacaaag atgaagtgca attggaattc 120

<210> 291
<211> 96
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic DNA
cassette

<400> 291
tctagaggtt gaggtgattt tatgaaaaag aatatcgcat ttcttcttgc atctatgttc 60
gttttttcta ttgctacaaa tgcatacgct gaattc 96

<210> 292
<211> 1221
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic gene cassette

<220>
<221> CDS
<222> (79)..(1158)

<400> 292
gctagcatcg aatggcgcaa aacctttcgc ggtatggcat gatagcgccc ggaagagagt 60

caattcaggg tggtgaat gtg aaa cca gta acg tta tac gat gtc gca gag 111
Val Lys Pro Val Thr Leu Tyr Asp Val Ala Glu
1 5 10

tat gcc ggt gtc tct tat cag acc gtt tcc cgc gtg gtg aac cag gcc 159
Tyr Ala Gly Val Ser Tyr Gln Thr Val Ser Arg Val Val Asn Gln Ala
15 20 25

agc cac gtt tct gcg aaa acg cgg gaa aaa gtg gaa gcg gcg atg gcg 207
Ser His Val Ser Ala Lys Thr Arg Glu Lys Val Glu Ala Ala Met Ala
30 35 40

gag ctg aat tac att cct aac cgc gtg gca caa caa ctg gcg ggc aaa 255
Glu Leu Asn Tyr Ile Pro Asn Arg Val Ala Gln Gln Leu Ala Gly Lys
45 50 55

cag tcg ttg ctg att ggc gtt gcc acc tcc agt ctg gcc ctg cac gcg 303
Gln Ser Leu Leu Ile Gly Val Ala Thr Ser Ser Leu Ala Leu His Ala
60 65 70 75

ccg tcg caa att gtc gcg gcg att aaa tct cgc gcc gat caa ctg ggt 351
Pro Ser Gln Ile Val Ala Ala Ile Lys Ser Arg Ala Asp Gln Leu Gly
80 85 90

gcc agc gtg gtc gtg tcg atg gta gaa cga agc ggc gtc gaa gcc tgt 399
Ala Ser Val Val Val Ser Met Val Glu Arg Ser Gly Val Glu Ala Cys
95 100 105

aaa gcg gcg gtg cac aat ctt ctc gcg caa cgt gtc agt ggg ctg att 447
Lys Ala Ala Val His Asn Leu Leu Ala Gln Arg Val Ser Gly Leu Ile
110 115 120

att aac tat ccg ctg gat gac cag gat gct att gct gtg gaa gct gcc 495
Ile Asn Tyr Pro Leu Asp Asp Gln Asp Ala Ile Ala Val Glu Ala Ala
125 130 135

tgc act aat gtt ccg gcg tta ttt ctt gat gtc tct gac cag aca ccc 543
Cys Thr Asn Val Pro Ala Leu Phe Leu Asp Val Ser Asp Gln Thr Pro
140 145 150 155

atc aac agt att att ttc tcc cat gag gac ggt acg cga ctg ggc gtg 591
Ile Asn Ser Ile Ile Phe Ser His Glu Asp Gly Thr Arg Leu Gly Val
160 165 170

gag cat ctg gtc gca ttg ggc cac cag caa atc gcg ctg tta gct ggc 639
Glu His Leu Val Ala Leu Gly His Gln Gln Ile Ala Leu Leu Ala Gly
175 180 185

```
cca tta agt tct gtc tcg gcg cgt ctg cgt ctg gct ggc tgg cat aaa   687
Pro Leu Ser Ser Val Ser Ala Arg Leu Arg Leu Ala Gly Trp His Lys
        190                 195                 200

tat ctc act cgc aat caa att cag ccg ata gcg gaa cgg gaa ggc gac   735
Tyr Leu Thr Arg Asn Gln Ile Gln Pro Ile Ala Glu Arg Glu Gly Asp
    205                 210                 215

tgg agt gcc atg tcc ggt ttt caa caa acc atg caa atg ctg aat gag   783
Trp Ser Ala Met Ser Gly Phe Gln Gln Thr Met Gln Met Leu Asn Glu
220                 225                 230                 235

ggc atc gtt ccc act gcg atg ctg gtt gcc aac gat cag atg gcg ctg   831
Gly Ile Val Pro Thr Ala Met Leu Val Ala Asn Asp Gln Met Ala Leu
                240                 245                 250

ggc gca atg cgt gcc att acc gag tcc ggg ctg cgc gtt ggt gcg gac   879
Gly Ala Met Arg Ala Ile Thr Glu Ser Gly Leu Arg Val Gly Ala Asp
            255                 260                 265

atc tcg gta gtg gga tac gac gat acc gag gac agc tca tgt tat atc   927
Ile Ser Val Val Gly Tyr Asp Asp Thr Glu Asp Ser Ser Cys Tyr Ile
        270                 275                 280

ccg ccg ctg acc acc atc aaa cag gat ttt cgc ctg ctg ggg caa acc   975
Pro Pro Leu Thr Thr Ile Lys Gln Asp Phe Arg Leu Leu Gly Gln Thr
    285                 290                 295

agc gtg gac cgc ttg ctg caa ctc tct cag ggc cag gcg gtg aag ggc   1023
Ser Val Asp Arg Leu Leu Gln Leu Ser Gln Gly Gln Ala Val Lys Gly
300                 305                 310                 315

aat cag ctg ttg ccc gtc tca ctg gtg aaa aga aaa acc acc ctg gct   1071
Asn Gln Leu Leu Pro Val Ser Leu Val Lys Arg Lys Thr Thr Leu Ala
                320                 325                 330

ccc aat acg caa acc gcc tct ccc cgc gcg ttg gcc gat tca ctg atg   1119
Pro Asn Thr Gln Thr Ala Ser Pro Arg Ala Leu Ala Asp Ser Leu Met
            335                 340                 345

cag ctg gca cga cag gtt tcc cga ctg gaa agc ggg cag tgaggctacc    1168
Gln Leu Ala Arg Gln Val Ser Arg Leu Glu Ser Gly Gln
        350                 355                 360

cgataaaagc ggcttcctga caggaggccg ttttgttttg cagcccactt aag        1221
```

<210> 293
<211> 360
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic gene cassette

<400> 293

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Val Lys Pro Val Thr Leu Tyr Asp Val Ala Glu Tyr Ala Gly Val Ser
 1               5                  10                  15

Tyr Gln Thr Val Ser Arg Val Val Asn Gln Ala Ser His Val Ser Ala
            20                  25                  30

Lys Thr Arg Glu Lys Val Glu Ala Ala Met Ala Glu Leu Asn Tyr Ile
        35                  40                  45

Pro Asn Arg Val Ala Gln Gln Leu Ala Gly Lys Gln Ser Leu Leu Ile
    50                  55                  60

Gly Val Ala Thr Ser Ser Leu Ala Leu His Ala Pro Ser Gln Ile Val
65                  70                  75                  80

Ala Ala Ile Lys Ser Arg Ala Asp Gln Leu Gly Ala Ser Val Val Val
                85                  90                  95

Ser Met Val Glu Arg Ser Gly Val Glu Ala Cys Lys Ala Ala Val His
            100                 105                 110

Asn Leu Leu Ala Gln Arg Val Ser Gly Leu Ile Ile Asn Tyr Pro Leu
        115                 120                 125

Asp Asp Gln Asp Ala Ile Ala Val Glu Ala Ala Cys Thr Asn Val Pro
    130                 135                 140

Ala Leu Phe Leu Asp Val Ser Asp Gln Thr Pro Ile Asn Ser Ile Ile
145                 150                 155                 160

Phe Ser His Glu Asp Gly Thr Arg Leu Gly Val Glu His Leu Val Ala
                165                 170                 175

Leu Gly His Gln Gln Ile Ala Leu Leu Ala Gly Pro Leu Ser Ser Val
            180                 185                 190

Ser Ala Arg Leu Arg Leu Ala Gly Trp His Lys Tyr Leu Thr Arg Asn
        195                 200                 205

Gln Ile Gln Pro Ile Ala Glu Arg Glu Gly Asp Trp Ser Ala Met Ser
    210                 215                 220

Gly Phe Gln Gln Thr Met Gln Met Leu Asn Glu Gly Ile Val Pro Thr
225                 230                 235                 240

Ala Met Leu Val Ala Asn Asp Gln Met Ala Leu Gly Ala Met Arg Ala
                245                 250                 255

Ile Thr Glu Ser Gly Leu Arg Val Gly Ala Asp Ile Ser Val Val Gly
            260                 265                 270

Tyr Asp Asp Thr Glu Asp Ser Ser Cys Tyr Ile Pro Pro Leu Thr Thr
        275                 280                 285

Ile Lys Gln Asp Phe Arg Leu Leu Gly Gln Thr Ser Val Asp Arg Leu
    290                 295                 300
```

Leu Gln Leu Ser Gln Gly Gln Ala Val Lys Gly Asn Gln Leu Leu Pro
305 310 315 320

Val Ser Leu Val Lys Arg Lys Thr Thr Leu Ala Pro Asn Thr Gln Thr
325 330 335

Ala Ser Pro Arg Ala Leu Ala Asp Ser Leu Met Gln Leu Ala Arg Gln
340 345 350

Val Ser Arg Leu Glu Ser Gly Gln
355 360

<210> 294
<211> 2380
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 294
gatctagcac caggcgttta agggcaccaa taactgcctt aaaaaaatta cgccccgccc 60
tgccactcat cgcagtactg ttgtaattca ttaagcattc tgccgacatg gaagccatca 120
caaacggcat gatgaacctg aatcgccagc ggcatcagca ccttgtcgcc ttgcgtataa 180
tatttgccca tagtgaaaac gggggcgaag aagttgtcca tattggctac gtttaaatca 240
aaactggtga aactcaccca gggattggct gagacgaaaa acatattctc aataaaccct 300
ttagggaaat aggccaggtt ttcaccgtaa cacgccacat cttgcgaata tatgtgtaga 360
aactgccgga aatcgtcgtg gtattcactc cagagcgatg aaaacgtttc agtttgctca 420
tggaaaacgg tgtaacaagg gtgaacacta tcccatatca ccagctcacc gtctttcatt 480
gccatacgga actccgggtg agcattcatc aggcgggcaa gaatgtgaat aaaggccgga 540
taaaacttgt gcttatttttt ctttacggtc tttaaaaagg ccgtaatatc cagctgaacg 600
gtctggttat aggtacattg agcaactgac tgaaatgcct caaaatgttc tttacgatgc 660
cattgggata tatcaacggt ggtatatcca gtgatttttt tctccatttt agcttcctta 720
gctcctgaaa atctcgataa ctcaaaaaat acgcccggta gtgatcttat ttcattatgg 780
tgaaagttgg aacctcaccc gacgtctaat gtgagttagc tcactcatta ggcaccccag 840
gctttacact ttatgcttcc ggctcgtatg ttgtgtggaa ttgtgagcgg ataacaattt 900
cacacaggaa acagctatga ccatgattac gaatttctag acccccccccc cgcatgccat 960
aacttcgtat aatgtacgct atacgaagtt ataagcttga cctgtgaagt gaaaaatggc 1020
gcagattgtg cgacattttt tttgtctgcc gtttaattaa agggggggggg gggccggcct 1080
gggggggggt gtacatgaaa ttgtaaacgt taatattttg ttaaaattcg cgttaaattt 1140
ttgttaaatc agctcatttt ttaaccaata ggccgaaatc ggcaaaatcc cttataaatc 1200
aaaagaatag accgagatag ggttgagtgt tgttccagtt tggaacaaga gtccactatt 1260
aaagaacgtg gactccaacg tcaaagggcg aaaaaccgtc tatcagggcg atggcccact 1320
acgagaacca tcaccctaat caagtttttt ggggtcgagg tgccgtaaag cactaaatcg 1380
gaaccctaaa gggagccccc gatttagagc ttgacgggga aagccggcga acgtggcgag 1440
aaaggaaggg aagaaagcga aaggagcggg cgctagggcg ctggcaagtg tagcggtcac 1500
gctgcgcgta accaccacac ccgccgcgct taatgcgccg ctacagggcg cgtgctagcg 1560
gagtgtatac tggcttacta tgttggcact gatgagggtg tcagtgaagt gcttcatgtg 1620
gcaggagaaa aaaggctgca ccggtgcgtc agcagaatat gtgatacagg atatattccg 1680
cttcctcgct cactgactcg ctacgctcgg tcgttcgact gcggcgagcg gaaatggctt 1740
acgaacgggg cggagatttc ctggaagatg ccaggaagat acttaacagg gaagtgagag 1800
ggccgcggca aagccgtttt tccataggct ccgcccccct gacaagcatc acgaaatctg 1860
acgctcaaat cagtggtggc gaaacccgac aggactataa agataccagg cgtttccccc 1920
tggcggctcc ctcctgcgct ctcctgttcc tgcctttcgg tttaccggtg tcattccgct 1980
gttatggccg cgtttgtctc attccacgcc tgacactcag ttccgggtag gcagttcgct 2040

ccaagctgga ctgtatgcac gaaccccccg ttcagtccga ccgctgcgcc ttatccggta 2100
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gtaattgatt tagaggagtt agtcttgaag tcatgcgccg gttaaggcta aactgaaagg 2220
acaagtttta gtgactgcgc tcctccaagc cagttacctc ggttcaaaga gttggtagct 2280
cagagaacct acgaaaaacc gccctgcaag gcggtttttt cgttttcaga gcaagagatt 2340
acgcgcagac caaaacgatc tcaagaagat catcttatta 2380

<210> 295
<211> 219
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 295
Met Glu Lys Lys Ile Thr Gly Tyr Thr Thr Val Asp Ile Ser Gln Trp
1 5 10 15

His Arg Lys Glu His Phe Glu Ala Phe Gln Ser Val Ala Gln Cys Thr
20 25 30

Tyr Asn Gln Thr Val Gln Leu Asp Ile Thr Ala Phe Leu Lys Thr Val
35 40 45

Lys Lys Asn Lys His Lys Phe Tyr Pro Ala Phe Ile His Ile Leu Ala
50 55 60

Arg Leu Met Asn Ala His Pro Glu Phe Arg Met Ala Met Lys Asp Gly
65 70 75 80

Glu Leu Val Ile Trp Asp Ser Val His Pro Cys Tyr Thr Val Phe His
85 90 95

Glu Gln Thr Glu Thr Phe Ser Ser Leu Trp Ser Glu Tyr His Asp Asp
100 105 110

Phe Arg Gln Phe Leu His Ile Tyr Ser Gln Asp Val Ala Cys Tyr Gly
115 120 125

Glu Asn Leu Ala Tyr Phe Pro Lys Gly Phe Ile Glu Asn Met Phe Phe
130 135 140

Val Ser Ala Asn Pro Trp Val Ser Phe Thr Ser Phe Asp Leu Asn Val
145 150 155 160

Ala Asn Met Asp Asn Phe Phe Ala Pro Val Phe Thr Met Gly Lys Tyr
165 170 175

Tyr Thr Gln Gly Asp Lys Val Leu Met Pro Leu Ala Ile Gln Val His
180 185 190

His Ala Val Cys Asp Gly Phe His Val Gly Arg Met Leu Asn Glu Leu
195 200 205

Gln Gln Tyr Cys Asp Glu Trp Gln Gly Gly Ala
210 215

<210> 296
<211> 3488
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 296
gtacatgaaa ttgtaaacgt taatattttg ttaaaattcg cgttaaattt ttgttaaatc 60
agctcatttt ttaaccaata ggccgaaatc ggcaaaatcc cttataaatc aaaagaatag 120
accgagatag ggttgagtgt tgttccagtt tggaacaaga gtccactatt aaagaacgtg 180
gactccaacg tcaaagggcg aaaaaccgtc tatcagggcg atggcccact acgagaacca 240
tcaccctaat caagtttttt ggggtcgagg tgccgtaaag cactaaatcg gaaccctaaa 300
gggagccccc gatttagagc ttgacgggga aagccggcga acgtggcgag aaaggaaggg 360
aagaaagcga aaggagcggg cgctagggcg ctggcaagtg tagcggtcac gctgcgcgta 420
accaccacac ccgccgcgct taatgcgccg ctacagggcg cgtgctagcg gagtgtatac 480
tggcttacta tgttggcact gatgagggtg tcagtgaagt gcttcatgtg gcaggagaaa 540
aaaggctgca ccggtgcgtc agcagaatat gtgatacagg atatattccg cttcctcgct 600
cactgactcg ctacgctcgg tcgttcgact gcggcgagcg gaaatggctt acgaacgggg 660
cggagatttc ctggaagatg ccaggaagat acttaacagg gaagtgagag ggccgcggca 720
aagccgtttt tccataggct ccgccccccct gacaagcatc acgaaatctg acgctcaaat 780
cagtggtggc gaaacccgac aggactataa agataccagg cgtttccccc tggcggctcc 840
ctcctgcgct ctcctgttcc tgcctttcgg tttaccggtg tcattccgct gttatggccg 900
cgtttgtctc attccacgcc tgacactcag ttccgggtag gcagttcgct ccaagctgga 960
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aagttgtcca tattggctac gtttaaatca aaactggtga aactcaccca gggattggct 1560
gagacgaaaa acatattctc aataaaccct ttagggaaat aggccaggtt ttcaccgtaa 1620
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cagagcgatg aaaacgtttc agtttgctca tggaaaacgg tgtaacaagg gtgaacacta 1740
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acgcccggta gtgatcttat ttcattatgg tgaaagttgg aacctcaccc gacgtctaat 2100
gtgagttagc tcactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg 2160
ttgtgtggaa ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac 2220
gaatttctag acccccccc cgcatgccat aacttcgtat aatgtacgct atacgaagtt 2280
ataagcttga cctgtgaagt gaaaaatggc gcagattgtg cgacattttt tttgtctgcc 2340
gtttaattaa ggggggggc cggccattat caaaaaggat ctcaagaaga tcctttgatc 2400
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agattatcaa aaaggatctt cacctagatc cttttaaatt aaaaatgaag ttttaaatca 2520
atctaaagta tatatgagta aacttggtct gacagttacc caatgcttaa tcagtgaggc 2580
acctatctca gcgatctgtc tatttcgttc atccatagtt gcctgactcc ccgtcgtgta 2640

gataactacg atacgggagg gcttaccatc tggccccagt gctgcaatga taccgcgaga 2700
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cagaagtggt cctgcaactt tatccgcctc catccagtct attaactgtt gccgggaagc 2820
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cgtggtgtca cgctcgtcgt ttggtatggc ttcattcagc tccggttccc aacgatcaag 2940
gcgagttaca tgatccccca tgttgtgcaa aaaagcggtt agctccttcg gtcctccgat 3000
cgttgtcaga agtaagttgg ccgcagtgtt atcactcatg gttatggcag cactgcataa 3060
ttctcttact gtcatgccat ccgtaagatg cttttctgtg actggtgagt actcaaccaa 3120
gtcattctga gaatagtgta tgcggcgacc gagttgctct tgcccggcgt caatacggga 3180
taataccgcg ccacatagca gaactttaaa agtgctcatc attggaaaac gttcttcggg 3240
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aaggcaaaat gccgcaaaaa agggaataag ggcgacacgg aaatgttgaa tactcatact 3420
cttccttttt caatattatt gaagcattta tcagggttat tgtctcatga gcggatacat 3480
atttgaat 3488

<210> 297
<211> 219
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
vector sequence

<400> 297

Met	Glu	Lys	Lys	Ile	Thr	Gly	Tyr	Thr	Thr	Val	Asp	Ile	Ser	Gln	Trp
1				5					10					15	
His	Arg	Lys	Glu	His	Phe	Glu	Ala	Phe	Gln	Ser	Val	Ala	Gln	Cys	Thr
		20					25					30			
Tyr	Asn	Gln	Thr	Val	Gln	Leu	Asp	Ile	Thr	Ala	Phe	Leu	Lys	Thr	Val
	35					40					45				
Lys	Lys	Asn	Lys	His	Lys	Phe	Tyr	Pro	Ala	Phe	Ile	His	Ile	Leu	Ala
50					55					60					
Arg	Leu	Met	Asn	Ala	His	Pro	Glu	Phe	Arg	Met	Ala	Met	Lys	Asp	Gly
65				70					75					80	
Glu	Leu	Val	Ile	Trp	Asp	Ser	Val	His	Pro	Cys	Tyr	Thr	Val	Phe	His
			85					90					95		
Glu	Gln	Thr	Glu	Thr	Phe	Ser	Ser	Leu	Trp	Ser	Glu	Tyr	His	Asp	Asp
		100					105					110			
Phe	Arg	Gln	Phe	Leu	His	Ile	Tyr	Ser	Gln	Asp	Val	Ala	Cys	Tyr	Gly
	115					120					125				
Glu	Asn	Leu	Ala	Tyr	Phe	Pro	Lys	Gly	Phe	Ile	Glu	Asn	Met	Phe	Phe
130					135					140					
Val	Ser	Ala	Asn	Pro	Trp	Val	Ser	Phe	Thr	Ser	Phe	Asp	Leu	Asn	Val
145				150					155					160	

Ala Asn Met Asp Asn Phe Phe Ala Pro Val Phe Thr Met Gly Lys Tyr
165 170 175

Tyr Thr Gln Gly Asp Lys Val Leu Met Pro Leu Ala Ile Gln Val His
180 185 190

His Ala Val Cys Asp Gly Phe His Val Gly Arg Met Leu Asn Glu Leu
195 200 205

Gln Gln Tyr Cys Asp Glu Trp Gln Gly Gly Ala
210 215

<210> 298
<211> 299
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 298
Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
1 5 10 15

Phe Cys Leu Pro Val Phe Ala His Pro Glu Thr Leu Val Lys Val Lys
20 25 30

Asp Ala Glu Asp Gln Leu Gly Ala Arg Val Gly Tyr Ile Glu Leu Asp
35 40 45

Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe Arg Pro Glu Glu Arg Phe
50 55 60

Pro Met Met Ser Thr Phe Lys Val Leu Leu Cys Gly Ala Val Leu Ser
65 70 75 80

Arg Ile Asp Ala Gly Gln Glu Gln Leu Gly Arg Arg Ile His Tyr Ser
85 90 95

Gln Asn Asp Leu Val Glu Tyr Ser Pro Val Thr Glu Lys His Leu Thr
100 105 110

Asp Gly Met Thr Val Arg Glu Leu Cys Ser Ala Ala Ile Thr Met Ser
115 120 125

Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr Thr Ile Gly Gly Pro Lys
130 135 140

Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val Thr Arg Leu
145 150 155 160

Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg
165 170 175

Asp Thr Thr Met Pro Val Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
180 185 190

Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp
195 200 205

Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro
210 215 220

Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser
225 230 235 240

Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile
245 250 255

Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp Glu Arg Asn
260 265 270

Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His Trp Val Thr
275 280 285

Val Arg Pro Ser Leu Leu Ile Tyr Thr Leu Asp
290 295

<210> 299
<211> 2728
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 299
gatctcataa cttcgtataa tgtatgctat acgaagttat gacgtctaat gtgagttagc 60
tcactcatta ggcaccccag gctttacact ttatgcttcc ggctcgtatg ttgtgtggaa 120
ttgtgagcgg ataacaattt cacacaggaa acagctatga ccatgattac gaatttctag 180
acccccccc cgcatgccat aacttcgtat aatgtacgct atacgaagtt ataagcttga 240
cctgtgaagt gaaaaatggc gcagattgtg cgacattttt tttgtctgcc gtttaattaa 300
ggggggggc cggccattat caaaaaggat ctcaagaaga tcctttgatc ttttctacgg 360
ggtctgacgc tcagtggaac gaaaactcac gttaagggat tttggtcatg agattatcaa 420
aaaggatctt cacctagatc cttttaaatt aaaaatgaag ttttaaatca atctaaagta 480
tatatgagta aacttggtct gacagttacc caatgcttaa tcagtgaggc acctatctca 540
gcgatctgtc tatttcgttc atccatagtt gcctgactcc ccgtcgtgta gataactacg 600
atacgggagg gcttaccatc tggccccagt gctgcaatga taccgcgaga cccacgctca 660
ccggctccag atttatcagc aataaaccag ccagccggaa gggccgagcg cagaagtggt 720
cctgcaactt tatccgcctc catccagtct attaactgtt gccgggaagc tagagtaagt 780
agttcgccag ttaatagttt gcgcaacgtt gttgccattg ctacaggcat cgtggtgtca 840
cgctcgtcgt ttggtatggc ttcattcagc tccggttccc aacgatcaag gcgagttaca 900
tgatccccca tgttgtgcaa aaaagcggtt agctccttcg gtcctccgat cgttgtcaga 960
agtaagttgg ccgcagtgtt atcactcatg gttatggcag cactgcataa ttctcttact 1020
gtcatgccat ccgtaagatg cttttctgtg actggtgagt actcaaccaa gtcattctga 1080
gaatagtgta tgcggcgacc gagttgctct tgcccggcgt caatacggga taataccgcg 1140
ccacatagca gaactttaaa agtgctcatc attggaaaac gttcttcggg gcgaaaactc 1200
tcaaggatct taccgctgtt gagatccagt tcgatgtaac ccactcgcgc acccaactga 1260
tcctcagcat cttttacttt caccagcgtt tctgggtgag caaaaacagg aaggcaaaat 1320
gccgcaaaaa agggaataag ggcgacacgg aaatgttgaa tactcatact cttccttttt 1380
caatattatt gaagcattta tcagggttat tgtctcatga gcggatacat atttgaatgt 1440
acatgaaatt gtaaacgtta atattttgtt aaaattcgcg ttaaattttt gttaaatcag 1500

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ctcatttttt aaccaatagg ccgaaatcgg caaaatccct tataaatcaa aagaatagac 1560
cgagataggg ttgagtgttg ttccagtttg gaacaagagt ccactattaa agaacgtgga 1620
ctccaacgtc aaagggcgaa aaaccgtcta tcagggcgat ggcccactac gagaaccatc 1680
accctaatca agtttttttgg ggtcgaggtg ccgtaaagca ctaaatcgga accctaaagg 1740
gagcccccga tttagagctt gacggggaaa gccggcgaac gtggcgagaa aggaagggaa 1800
gaaagcgaaa ggagcgggcg ctagggcgct ggcaagtgta gcggtcacgc tgcgcgtaac 1860
caccacaccc gccgcgctta atgcgccgct acagggcgcg tgctagcgga gtgtatactg 1920
gcttactatg ttggcactga tgagggtgtc agtgaagtgc ttcatgtggc aggagaaaaa 1980
aggctgcacc ggtgcgtcag cagaatatgt gatacaggat atattccgct tcctcgctca 2040
ctgactcgct acgctcggtc gttcgactgc ggcgagcgga aatggcttac gaacggggcg 2100
gagatttcct ggaagatgcc aggaagatac ttaacaggga agtgagaggg ccgcggcaaa 2160
gccgtttttc cataggctcc gccccccctga caagcatcac gaaatctgac gctcaaatca 2220
gtggtggcga aacccgacag gactataaag ataccaggcg tttccccctg gcggctccct 2280
cctgcgctct cctgttcctg cctttcggtt taccggtgtc attccgctgt tatggccgcg 2340
tttgtctcat tccacgcctg acactcagtt ccgggtaggc agttcgctcc aagctggact 2400
gtatgcacga acccccgtt cagtccgacc gctgcgcctt atccggtaac tatcgtcttg 2460
agtccaaccc ggaaagacat gcaaaagcac cactggcagc agccactggt aattgattta 2520
gaggagttag tcttgaagtc atgcgccggt taaggctaaa ctgaaaggac aagttttagt 2580
gactgcgctc ctccaagcca gttacctcgg ttcaaagagt tggtagctca gagaacctac 2640
gaaaaaccgc cctgcaaggc ggtttttcg ttttcagagc aagagattac gcgcagacca 2700
aaacgatctc aagaagatca tcttatta                                    2728
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<210> 300
<211> 299
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic vector sequence

<400> 300

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Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
  1               5                  10                  15

Phe Cys Leu Pro Val Phe Ala His Pro Glu Thr Leu Val Lys Val Lys
            20                  25                  30

Asp Ala Glu Asp Gln Leu Gly Ala Arg Val Gly Tyr Ile Glu Leu Asp
        35                  40                  45

Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe Arg Pro Glu Glu Arg Phe
    50                  55                  60

Pro Met Met Ser Thr Phe Lys Val Leu Leu Cys Gly Ala Val Leu Ser
65                  70                  75                  80

Arg Ile Asp Ala Gly Gln Glu Gln Leu Gly Arg Arg Ile His Tyr Ser
                85                  90                  95

Gln Asn Asp Leu Val Glu Tyr Ser Pro Val Thr Glu Lys His Leu Thr
            100                 105                 110

Asp Gly Met Thr Val Arg Glu Leu Cys Ser Ala Ala Ile Thr Met Ser
        115                 120                 125
```

Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr Thr Ile Gly Gly Pro Lys
130 135 140

Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val Thr Arg Leu
145 150 155 160

Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg
165 170 175

Asp Thr Thr Met Pro Val Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
180 185 190

Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp
195 200 205

Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro
210 215 220

Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser
225 230 235 240

Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile
245 250 255

Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp Glu Arg Asn
260 265 270

Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His Trp Val Thr
275 280 285

Val Arg Pro Ser Leu Leu Ile Tyr Thr Leu Asp
290 295

<210> 301
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 301
tatgagatct cataacttcg tataatgtac gctatacgaa gttat 45

<210> 302
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 302
taataacttc gtatagcata cattatacga agttatgaga tctca 45

<210> 303
<211> 91
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 303
catttttgc cctcgttatc tacgcatgcg ataacttcgt atagcgtaca ttatacgaag 60
ttattctaga catggtcata gctgtttcct g 91

<210> 304
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 304
gggggggaatt cggtggtggt ggatctgcgt gcgctgaaac ggttgaaagt tg 52

<210> 305
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 305
ccccccccaag cttatcaaga ctccttatta cg 32

<210> 306
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 306
ggggggggaa ttcggaggcg gttccggtgg tggc 34

<210> 307
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 307
ggggggggaa ttcgagcaga agctgatctc tgaggaggat ctgtagggtg gtggctctgg 60
ttccggtgat tttg 74

<210> 308
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 308
ccataacttc gtataatgta cgctatacga agttata 37

<210> 309
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 309
agcttataac ttcgtatagc gtacattata cgaagttatg gcatg 45

<210> 310
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 310
agcttgacct gtgaagtgaa aaatggcgca gattgtgcga catttttttt gtctgccgtt 60
taattaaagg gggggt 76

<210> 311
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 311
gtacaccccc ccccaggccg gccccccccc ccctttaatt aaacggcaga caaaaaaaat 60
gtcgcacaat ctgcg 75

<210> 312
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 312
gggggggtgt acattcaaat atgtatccgc tcatg 35

<210> 313
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 313
gggttacatc gaactggatc tc 22

<210> 314
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 314
ccagttcgat gtaacccact cgcgcaccca actgatcctc agcatctttt actttcacc 59

<210> 315
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 315
actctagctt cccggcaaca gttaatagac tggatggagg cgg 43

<210> 316
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 316
ctgttgccgg gaagctagag taag 24

<210> 317
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 317
ccccccctta attaaggggg ggggccggcc attatcaaaa aggatctcaa gaagatcc 58

<210> 318
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 318
ggggggggct agcacgcgcc ctgtagcggc gcattaa 37

<210> 319
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 319
ccccccctgt acatgaaatt gtaaacgtta atattttg 38

<210> 320
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 320
gggcgatggc ccactacgag aaccatcacc ctaatc 36

<210> 321
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 321
gggggggagat ctaataagat gatcttcttg ag 32

<210> 322
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 322
gagttggtag ctcagagaac ctacgaaaaa ccgccctgca aggcg 45

<210> 323
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 323
gtaggttctc tgagctacca actc 24

<210> 324
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 324
gtttcccccct ggcggctccc tcctgcgctc tcctgttcct gcc 43

<210> 325
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 325
aggagggagc cgccaggggg aaac 24

<210> 326
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 326
gacatcagcg ctagcggagt gtatac 26

<210> 327
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 327
gatctcataa cttcgtataa tgtatgctat acgaagttat tca 43

<210> 328
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 328
gatctgaata acttcgtata gcatacatta tacgaagtta tgaga 45

<210> 329
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 329
gggggggaga tctgaccaaa atcccttaac gtgag 35

<210> 330
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 330
ggtatctgcg ctctgctgta gccagttacc ttcgg 35

<210> 331
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 331
cccccccgct agccatgtga gcaaaaggcc agcaa 35

<210> 332
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 332
gggacgtcgg gtgaggttcc aac 23

<210> 333
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 333
ccatacggaa ctccgggtga gcattcatc 29

<210> 334
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 334
ccggagttcc gtatgg 16

<210> 335
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 335
acgtttaaat caaaactgg 19

<210> 336
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 336
ccagttttga tttaaacgta gccaatatgg acaacttctt cgcccccgtt ttcactatgg 60
gcaaatatt 69

<210> 337
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 337
ggaagatcta gcaccaggcg tttaag 26

<210> 338
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 338
gaggccggcc atcgaatggc gcaaaac 27

<210> 339
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 339
cgcgtaccgt cctcatggga gaaaataata c 31

<210> 340
<211> 83
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 340
ccatgaggac ggtacgcgac tgggcgtgga gcatctggtc gcattgggtc accagcaaat 60
ccgctgttag ctggcccatt aag 83

<210> 341
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 341
gtcagcggcg ggatataaca tgagctgtcc tcggtatcgt cg 42

<210> 342
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 342
gttatatccc gccgctgacc accatcaaac 30

<210> 343
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 343
catcagtgaa tcggccaacg cgcggggaga ggcggtttgc gtattgggag ccagggtggt 60
ttttc 65

<210> 344
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 344
ggttaattaa cctcactgcc cgctttccag tcgggaaacc tgtcgtgcca gctgcatcag 60
tgaatcggcc aac 73

<210> 345
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 345
ctagactagt gtttaaaccg gaccgggggg gggcttaagg gggggggggg 50

<210> 346
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 346
ctagcccccc ccccccttaa gccccccccc ggtccggttt aaacactagt 50

<210> 347
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 347
ctagactagt gtttaaaccg gaccgggggg gggcttaagg gggggggggg 50

<210> 348
<211> 82
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 348
ccccccctta agtgggctgc aaaacaaaac ggcctcctgt caggaagccg cttttatcgg 60
gtagcctcac tgcccgcttt cc 82

<210> 349
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 349
gttgttgtgc cacgcggtta ggaatgtaat tcagctccgc 40

<210> 350
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 350
aaccgcgtgg cacaacaac 19

<210> 351
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 351
cttcgttcta ccatcgacac gaccacgctg gcacccagtt g 41

<210> 352
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 352
gtgtcgatgg tagaacgaag 20

<210> 353
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 353
ccacagcaat agcatcctgg tcatccagcg gatagttaat aatcagccca ctgacacgtt 60
gcgcgag 67

<210> 354
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 354
gaccaggatg ctattgctgt gg 22

<210> 355
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 355
cagcgcgatt tgctggtggc ccaatgcgac cagatgc 37

<210> 356
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 356
caccagcaaa tcgcgctg 18

<210> 357
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 357
cccggactcg gtaatggcac gcattgcgcc cagcgcc 37

<210> 358
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 358
gccattaccg agtccggg 18

<210> 359
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 359
aattccacca tcatcaccat tgacgtcta 29

<210> 360
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 360
agcttagacg tcaatggtga tgatggtgg 29

<210> 361
<211> 1289
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic gene cassette

<400> 361
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cacgtggatc cggtaccagg ccggccatta tcaaaaagga tctcaagaag atcctttgat 120
cttttctacg gggtctgacg ctcagtggaa cgaaaactca cgttaaggga ttttggtcat 180
gagattatca aaaaggatct tcacctagat ccttttaaat taaaaatgaa gttttaaatc 240
aatctaaagt atatatgagt aaacttggtc tgacagttac caatgcttaa tcagtgaggc 300
acctatctca gcgatctgtc tatttcgttc atccatagtt gcctgactcc ccgtcgtgta 360
gataactacg atacgggagg gcttaccatc tggccccagt gctgcaatga taccgcgaga 420
cccacgctca ccggctccag atttatcagc aataaaccag ccagccggaa gggccgagcg 480
cagaagtggt cctgcaactt tatccgcctc catccagtct attaactgtt gccgggaagc 540
tagagtaagt agttcgccag ttaatagttt gcgcaacgtt gttgccattg ctacaggcat 600
cgtggtgtca cgctcgtcgt ttggtatggc ttcattcagc tccggttccc aacgatcaag 660
gcgagttaca tgatccccca tgttgtgcaa aaaagcggtt agctccttcg gtcctccgat 720
cgttgtcaga agtaagttgg ccgcagtgtt atcactcatg gttatggcag cactgcataa 780
ttctcttact gtcatgccat ccgtaagatg cttttctgtg actggtgagt actcaaccaa 840
gtcattctga gaatagtgta tgcggcgacc gagttgctct tgcccggcgt caatacggga 900
taataccgcg ccacatagca gaactttaaa agtgctcatc attggaaaac gttcttcggg 960
gcgaaaactc tcaaggatct taccgctgtt gagatccagt tcgatgtaac ccactcgtgc 1020
acccaactga tcttcagcat cttttacttt caccagcgtt tctgggtgag caaaaacagg 1080
aaggcaaaat gccgcaaaaa agggaataag ggcgacacgg aaatgttgaa tactcatact 1140
cttccttttt caatattatt gaagcattta tcagggttat tgtctcatga gcggatacat 1200
atttgaatgt actcggccgc acgagctgca ggcgccatta atggctcgag cgcgcttcag 1260
cgctttgtct tccggatgta catgaaatt 1289

<210> 362
<211> 286
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic gene cassette

<400> 362

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Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
  1               5                  10                  15

Phe Cys Leu Pro Val Phe Ala His Pro Glu Thr Leu Val Lys Val Lys
             20                  25                  30

Asp Ala Glu Asp Gln Leu Gly Ala Arg Val Gly Tyr Ile Glu Leu Asp
         35                  40                  45

Leu Asn Ser Gly Lys Ile Leu Glu Ser Phe Arg Pro Glu Glu Arg Phe
     50                  55                  60

Pro Met Met Ser Thr Phe Lys Val Leu Leu Cys Gly Ala Val Leu Ser
 65                  70                  75                  80

Arg Ile Asp Ala Gly Gln Glu Gln Leu Gly Arg Arg Ile His Tyr Ser
                 85                  90                  95

Gln Asn Asp Leu Val Glu Tyr Ser Pro Val Thr Glu Lys His Leu Thr
            100                 105                 110

Asp Gly Met Thr Val Arg Glu Leu Cys Ser Ala Ala Ile Thr Met Ser
        115                 120                 125

Asp Asn Thr Ala Ala Asn Leu Leu Leu Thr Thr Ile Gly Gly Pro Lys
    130                 135                 140

Glu Leu Thr Ala Phe Leu His Asn Met Gly Asp His Val Thr Arg Leu
145                 150                 155                 160

Asp Arg Trp Glu Pro Glu Leu Asn Glu Ala Ile Pro Asn Asp Glu Arg
                165                 170                 175

Asp Thr Thr Met Pro Val Ala Met Ala Thr Thr Leu Arg Lys Leu Leu
            180                 185                 190

Thr Gly Glu Leu Leu Thr Leu Ala Ser Arg Gln Gln Leu Ile Asp Trp
        195                 200                 205

Met Glu Ala Asp Lys Val Ala Gly Pro Leu Leu Arg Ser Ala Leu Pro
    210                 215                 220

Ala Gly Trp Phe Ile Ala Asp Lys Ser Gly Ala Gly Glu Arg Gly Ser
225                 230                 235                 240

Arg Gly Ile Ile Ala Ala Leu Gly Pro Asp Gly Lys Pro Ser Arg Ile
                245                 250                 255
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Val Val Ile Tyr Thr Thr Gly Ser Gln Ala Thr Met Asp Glu Arg Asn
260 265 270

Arg Gln Ile Ala Glu Ile Gly Ala Ser Leu Ile Lys His Trp
275 280 285

<210> 363
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 363
gccctgcaag cggaagac 18

<210> 364
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 364
ggctttcgaa tggccaaagg 20

<210> 365
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<220>
<221> modified_base
<222> (43)..(45)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys or Pro

<220>
<221> modified_base
<222> (52)..(54)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys

<220>
<221> modified_base
<222> (58)..(60)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 365
gccctgcaag cggaagactt tgcgryttat tattgchwkc agnnndvtdv tnnnyctnnn 60
acctttggcc attcgaaagc c 81

<210> 366
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> modified_base
<222> (43)..(45)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Pro

<220>
<221> modified_base
<222> (52)..(54)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<220>
<221> modified_base
<222> (58)..(60)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 366
gccctgcaag cggaagacgt gggcgtgtat tattgchwkc agnnndvtdv tnnnyctnnn 60
acctttggcc attcgaaagc c 81

<210> 367
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> modified_base
<222> (43)..(45)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys or Pro

<220>
<221> modified_base
<222> (52)..(54)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys

<220>
<221> modified_base
<222> (58)..(60)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys

<400> 367
gccctgcaag cggaagacgt ggcggtgtat tattgchwkc agnnndvtdv tnnnyctnnn 60
acctttggcc attcgaaagc c 81

<210> 368
<211> 108
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
<220>
<221> modified_base
<222> (47)..(49)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys or Trp

<220>
<221> modified_base
<222> (50)..(52)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys or Trp

<220>
<221> modified_base
<222> (53)..(55)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys or Trp

<220>
<221> modified_base
<222> (56)..(58)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (59)..(61)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (62)..(64)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 368
cctgcaagcg gaagacgaag cggattatta ttgccagagc yrkgacnnnn nnnnnnnnnn 60
nnnnggcggc ggcacgaagt taaccgttct tggccaggaa ttcgagcc 108

<210> 369
<211> 105
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> modified_base
<222> (47)..(49)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (50)..(52)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (53)..(55)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (56)..(58)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (59)..(61)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 369
cctgcaagcg gaagacgaag cggattatta ttgccagagc yrkgacnnnn nnnnnnnnnn 60
nggcggcggc acgaagttaa ccgttcttgg ccaggaattc gagcc 105

<210> 370
<211> 102
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<220>
<221> modified_base
<222> (47)..(49)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (50)..(52)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (53)..(55)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys or Trp

<220>
<221> modified_base
<222> (56)..(58)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 370
cctgcaagcg gaagacgaag cggattatta ttgccagagc yrkgacnnnn nnnnnnnngg 60
cggcggcacg aagttaaccg ttcttggcca ggaattcgag cc 102

<210> 371
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 371
ggctcgaatt cctggcc 17

<210> 372
<211> 108
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide template

<220>
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<222> (21)..(23)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys

<220>
<221> modified_base
<222> (27)..(29)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys

<220>
<221> modified_base
<222> (30)..(32)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys

<220>
<221> modified_base
<222> (33)..(35)
<223> region represents a variable trinucleotide combination capable of coding any natural occurring amino acid other than Cys or not present

<220>
<221> modified_base
<222> (42)..(44)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<220>
<221> modified_base
<222> (48)..(50)
<223> region represents a variable trinucleotide combination
capable of coding any natural occurring amino acid
other than Cys

<400> 372
agggtctcga gtgggtgagc nnnattnnnn nnnnnrvtrv tnnnaccnnn tatgcggata 60
gcgtgaaagg ccgttttacc atttcacgtg ataattcgaa aaacacca 108